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ABSTRACT

The Edison Project, in concert with its public school partners, produces curriculum materials and standards for its six "academies," or educational levels. This book sets forth standards describing the knowledge and skills students will have in each curriculum area when they complete the Elementary Academy (for children in grades 3 through 5). After an introduction, the discussion of standards, activities, and assessments is divided into the following areas: Humanities and the Arts (including history, geography, civics, economics, language arts, and the arts); Mathematics; Science; Character and Ethics; Physical Fitness and Health; and Practical Arts and Skills. Included in each section are the standards for a specific curriculum area, accompanying activities (including cross-curricular activities), resources, and appropriate assessments. A final section on ensuring student success and an extensive list of acknowledgements conclude the volume. (DR)

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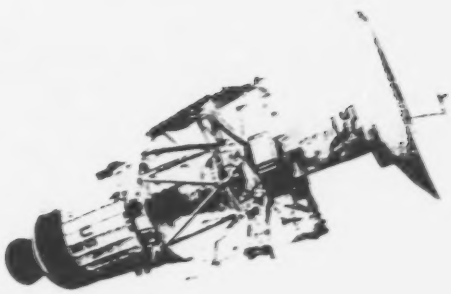

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The Edison Project

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Elementary Academy

Student Standards for the

Student Standards for the
Elementary Academy

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Acknowledgments

Introducing

The Edison Project

The Edison Project provides the design for a new kind of school, one that provides the best education in the world for children of every background. Public school partnerships will make this design a reality for pioneering school systems throughout the United States.

The Edison school design is highly ambitious, encouraging fundamental change in schools. We propose a rich and challenging curriculum for all students; optimum working conditions for all staff; more effective use of time by students, teachers, and administrators; technology for an information age; and careful assessment that provides real accountability.

At the heart of our school design are world-class standards that set forth what students should know and be able to do in order to be involved and productive participants in the world. These standards communicate high expectations to students, teachers, and parents. The student standards also bring coherence to the overall school design and serve as the basis for curriculum, instruction, and assessment.

Curriculum Support

The Edison Project, in concert with its public school partners, is developing a wealth of curriculum materials. Chief among these are computer-based, interactive frameworks that contain outlines of every subject area; strategies for integrating content across subject areas; model lessons; and instructional resources. Teachers get access to, add to, and adapt the frameworks via the computer. This networked system allows teachers to share curriculum and instructional materials with colleagues across the country. The Edison Project also supplies teachers with a wide variety of print-based instructional materials.

Many great works of art and intellect, such as Aesop's fables and Bach's *Well-Tempered Clavier*, were originally intended for instructional purposes. All Edison teaching materials, both print- and computer-based, are consistent with our view of the "well-tempered" curriculum—one that will endure as a work of art.

Structural Support

Each school is divided into six academies. The Readiness Academy serves three- and four-year-olds; the Primary Academy is for children in kindergarten through grade

2; and the Elementary Academy is for grades 3–5. The Junior Academy serves grades 6–8; the Senior Academy, grades 9 and 10; and the Collegiate Academy, grades 11 and 12. Each academy is further divided into houses of 90 to 120 students. A house in the Elementary Academy might include 35 third graders, 35 fourth graders, and 35 fifth graders, who work together in a variety of settings, including independent work as well as same-age and multi-age group work. Students remain with the same house throughout their academy experience, though the makeup of the house changes each year as the oldest students graduate and new students enter the academy. This unique structure allows students to achieve the standards for each academy at their own rate. Four teachers and additional specialist teachers provide the instruction for each house. Because students work with the same team of teachers over an extended period of time, they progress at a pace that ensures their confidence and competence.

About This Book

The standards in this publication describe the knowledge and skills students will have when they complete the Elementary Academy. These standards, along with the standards for the other academies, ensure that students leave school with more than a piece of paper. They graduate with powerful academic, artistic, ethical, and practical tools for living productive lives.

The standards for the Elementary Academy respect students' intellectual, social, and developmental needs and are organized into five categories: humanities and the arts, mathematics and science, character and ethics, physical fitness and health, and practical arts and skills. Illustrated here are descriptions of our approach to each area; examples of classroom projects and activities; outstanding books, performances, and other materials; and ongoing assessment activities through which students demonstrate their growing knowledge and skills.

The standards and accompanying activities, resources, and assessments combine to paint a vivid picture of life in an Edison school. We hope you come away from this publication with a clear understanding of how the challenge of high standards can motivate students to achieve.

Learning in the Age of Adventure

This is the Age of Adventure. At ages eight, nine, and ten, students are able to use their newly acquired literacies to expand their world knowledge and to develop sophisticated habits of mind. Having mastered the task of learning to read, elementary students are reading to learn, and they bring a new industriousness, intensity, and focus to the job of finding out how the world works.

This spirit of inquiry leads them beyond the classroom walls and out into the wide world, where interesting people, places, and ideas await discovery. At this age, much of that discovery goes beyond touching, seeing, and listening. Learning how to put knowledge and skills to work is the real adventure of this academy.

To capitalize on the spirit of adventure that permeates the Elementary Academy, much of the curriculum is organized into a three-year sequential study: Dinosaurs to Discovery, with a special emphasis on the idea of place. We titled this theme carefully to convey learning from a distant place, as symbolized by the dinosaurs, to the future, as symbolized by the space shuttle *Discovery*. This study engages children in the exciting panorama of the history of

Learning how to put knowledge and skills to work is the real adventure of this academy.

the natural world and its people. As they learn about the long ago and far away during all three years of this academy, students also gain knowledge about the here and now. Their journey through time and space starts with the dinosaurs—a study that takes them to a distant place. Students are introduced to one of the big ideas of this academy: adaptation to change, with special emphasis on how humans adapt to and change their environment. During this study, students learn how archaeologists "dig up the past" to learn about Earth before humans inhabited it.

The next stop on the journey takes the budding anthropologists, scientists, mathematicians, geographers, and historians back to their own community and state—my place. Here they explore the ideas of continuity and change and discover what is often the hidden history of their own place, using the research techniques they learned in their study of prehistoric times. Students learn more about the world by comparing and contrasting their community with communities in other parts of the world. Finally, students focus on the history of the United States—our place. In a culminating activity, students design a city of the future and create a time capsule of artifacts symbolizing their years in the Elementary Academy.

As they learn about the long ago and far away, students also gain knowledge about the here and now.

Throughout this three-year study, the young explorers in the Elementary Academy talk about people who have sought adventure and had an impact on the history of the world. In addition, they learn that adventures are not always fun and that their own educational adventures often require hard work and seriousness of purpose.

At this age, students develop powerful new learning tools and techniques, and they put challenging new concepts to the test in more formal ways than were possible when they were younger. Consider how younger and older children interact with objects in the environment. A five-year-old is content to move a toy car around the room and say, "Vroom, vroom!" A nine-year-old, however, is more inclined to turn the car over to see how it works. This sophisticated level of inquiry is central to how students explore and learn in this academy.

Inside the Elementary Academy

This look inside the Elementary Academy shows students who are enthusiastically engaged in activities related to the Dinosaurs to Discovery theme. A group of students is pouring over copies of the book *New Providence: A Changing Cityscape*, which uses text and color drawings to tell the story of a city's birth, decay, and rebirth since the turn of the century. The students are using this book as a model for their own city's story, which they will tell in a multimedia computer or video presentation that includes text, sound, and photographs. When the presentation is finished, the group will show it to an audience of teachers, peers, parents, members of the community, and local government officials before placing it in the Edison interactive library. Students across the country will prepare their own city stories and share them via the national Edison network.

> At this age, students develop powerful new learning tools and techniques, and they put challenging new concepts to the test.

In the same classroom, another group is working with their teacher, Ms. Murphy, on a long-term math project. The students are conducting a schoolwide survey to answer the question, What makes a place desirable to visit? They will compile the results of their survey in a computer program, from which they will print a graph to be displayed in the hallway outside their room. Today, the students must decide how best to represent the data they collected. Ms. Murphy leads the discussion and writes the students' suggestions, which include descriptors such as weather conditions, accessibility, and availability of public transportation, on a large sheet of chart paper. The group will test all of these ideas before making a final decision about how to represent the data.

Mr. Dorcas, another teacher in the academy, is supervising a group of students who are compiling and publishing an annotated book of folk songs from around the world. Each student is researching a different song and writing brief notes describing its meaning in historical context. Through their research and writing, students will compare songs from many cultures. The students, who also sing in the Edison Kids' Chorus, will leave their finished book behind for other students to use and enjoy.

By the time they leave the Elementary Academy, students will have acquired sophisticated knowledge about their immediate world and about the many factors that have shaped it. These experienced learners and travelers will have mastered the tools and techniques necessary for the transition to their next big adventure: the Junior Academy.

A Place for Us

Elementary students are feeling their independence and are ready to explore the wide world outside their immediate surroundings. We encourage students to look beyond the community in their explorations, but we also help them discover that sometimes the most exciting adventures are closest to home.

As they explore their environment, students learn that people and events from the past affect the here and now. Students at this level develop and refine the tools and techniques they need for deep exploration. Their educational adventures make it possible for them to put their personal experiences in a broader context. It is in this context that they also learn to use and apply knowledge. Community service takes on deeper meaning as students come to understand the difference one person can make—here, there, and everywhere.

The design for the Elementary Academy is based on reliable research and on the practice of successful educators. The curriculum is organized so that by the time they leave this academy and move on to the next, students have grasped the "big ideas" described on the next page. Some of these ideas were introduced in the Primary Academy, and students are now ready to understand them on a deeper level. The ideas about adaptation to change and putting learning to use are new to the Elementary Academy.

COMMUNICATION (reading, writing, speaking, listening, and viewing) is key to understanding and participating in the world.

BEING HUMAN means being part of a society and having rights and responsibilities to others; it also means being responsible for oneself.

HUMAN BEINGS can adapt to and change their environment.

KNOWLEDGE leads to an understanding of how the world works.

PEOPLE are able to put what they learn to use.

USING the mind and body well is important to living a productive and happy life.

The Distinctive Characteristics of the Elementary Academy include:

A Student-Centered Environment. Students at this level are often underappreciated, sandwiched between the primary grades and middle school, and few curriculum guides are designed especially for this crucial time in a child's development. The Edison structure celebrates this special time in students' lives, which many consider to be the pinnacle of childhood, and provides unique ways to address their changing interests, abilities, and needs. For example, in earlier academies, students' Kids' Collections consisted of simple objects used for sorting and counting. Now, as they expand their repertoire of learning tools and techniques, the Kids' Collections include items such as maps, which students can use as navigational devices for learning about the world.

The Edison structure celebrates this special time in students' lives, which many consider to be the pinnacle of childhood.

In addition, Edison's small school-within-a-school structure provides unique ways to deliver instruction and assures the constancy elementary students need. Students stay in the Elementary Academy with the same team of four teachers for three years, allowing each student time to meet our high expectations. This practice also eliminates the

disruption of having a new teacher each year and provides students with needed continuity and support throughout the program.

Recognizing that some students may need extra help to achieve our high standards, The Edison Project provides extensive professional development experiences for teachers in partnership schools, designed to help them develop and increase their repertoire of teaching techniques. To ensure that all students get the help they need, teachers choose from a range of strategies including direct instruction, reteaching, cooperative learning, and tutoring. In addition, we supply substantial resources, including technology, to be used by teachers and families in order to boost student achievement.

Close Involvement With Family. We sustain parental involvement through regular meetings, during which families and teachers discuss the students' progress and share materials and ideas. We introduce challenging new subject matter to students at this level, and close contact between home and school is crucial to their learning success. We provide families with access to a wealth of print and electronic materials, so they can reinforce at home what their children are learning in school. Family members may also use the home computer that The Edison Project provides to pursue educational objectives, such as learning a new language or job-related skill. Families are encouraged to participate actively in the life of the school as volunteers. We take extra care to welcome the families of students who are new to the Edison system, while students who have been in an Edison school since the Readiness or Primary academies benefit from the continuous support of their first teachers, their families.

We introduce challenging new subject matter to students at this level, and close contact between home and school is crucial to their learning success.

All students in partnership schools are immersed in the

Greats. The Greats include people, works, performances, ideas, and inventions that have shaped our world and have endured through the ages or are emerging today. The Greats make school vivid and fascinating and provide a common core of knowledge shared by all students. At this level, the Greats focus on people who have helped shape America, outstanding works of art from diverse cultures, and key technological innovations throughout history. Students go beyond mere recognition of the Greats in this academy to a deeper understanding of how they affected the world. We list representative sections of the Greats throughout this publication.

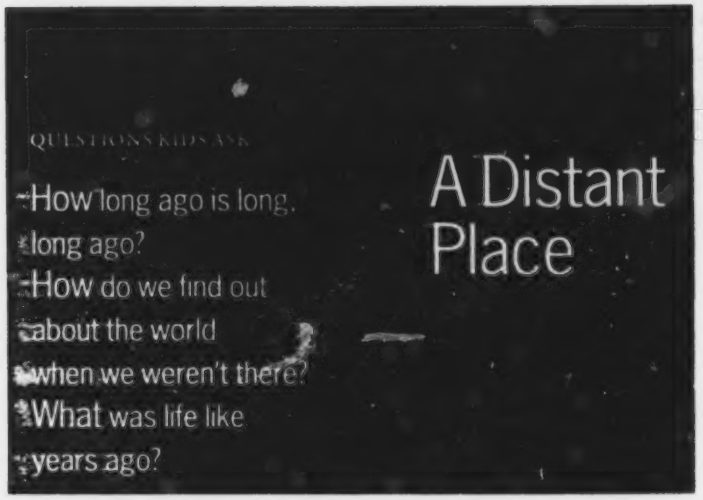
Students take more responsibility for their work and are more motivated because their projects are connected to the real world.

Project-Based Teaching and Learning.

We use direct instruction and other effective strategies in all academies in order ensure academic success for every student. Project-based learning is one of our main strategies. For example, all students participate in a long-range project in which they build a city of the future and compare and contrast it with what they have learned about their own community—past and present. Students take more responsibility for their work and are more motivated because their projects are connected to the real world and provide them with opportunities to use their newly acquired knowledge and skills. These projects also provide a mechanism for integrating all the subject areas that students are learning about.

Each quarter, for one to three weeks, the school suspends its usual schedule for students to participate in special projects, called "intensives." Intensive projects—which may involve an entire class, a cooperative-learning team, or a single student—allow students and teachers an unstructured time and arena for grappling with larger problems or areas of interest. They provide yet another opportunity for students to apply knowledge and skills to sophisticated problems.

The following chart illustrates how cross-curricular lessons and activities spring from the Dinosaurs to Discovery theme for this academy and the big idea of adaptation and change.


QUESTIONS KIDS ASK
How long ago is long, long ago?
How do we find out about the world when we weren't there?
What was life like years ago?
A Distant Place

HOW THEY FIND ANSWERS

Beginning the Dinosaurs to Discovery time line
Participating in mock archaeological dig
Studying why the dinosaurs disappeared
Drawing maps to illustrate landform changes since prehistoric times

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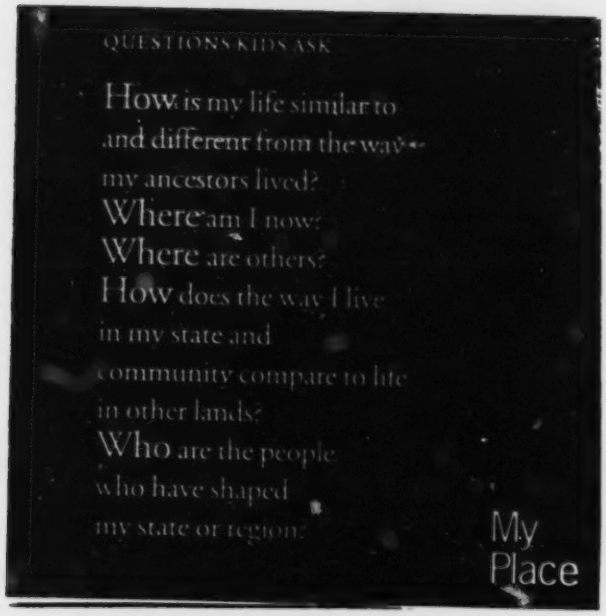
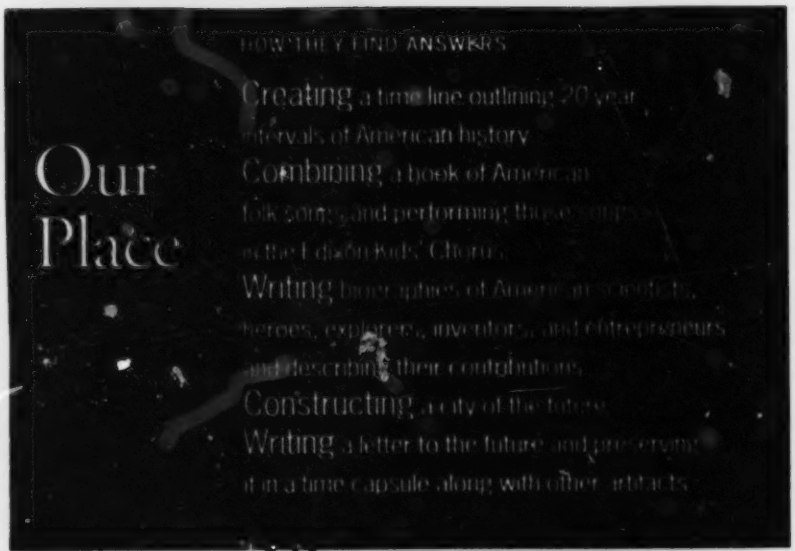

QUESTIONS KIDS ASK
How is my life similar to and different from the way my ancestors lived?
Where am I now?
Where are others?
How does the way I live in my state and community compare to life in other lands?
Who are the people who have shaped my state or region?
My Place

HOW THEY FIND ANSWERS

Continuing their time line development, focusing on the community/state
Interviewing senior citizens to write an oral history of the community
Writing and publishing a "My Place" travel guide to community/state
Using maps to explore the math found in buildings and shapes in the community
Contrasting life in the state and community with life in other places and times

QUESTIONS KIDS ASK

How did my ancestors get here?
What will life be like in 50 years?
What will prepare us to be good citizens?
Who has helped shape the history of the U.S.?
How did they do it?


Our Place
HOW THEY FIND ANSWERS
Creating a time line outlining 20-year intervals of American history
Combining a book of American folk songs and performing three songs in the Kindergarten Chorus
Writing brief sketches of American presidents, heroes, explorers, inventors, and entrepreneurs and describing their contributions
Constructing a city of the future
Writing a letter to the future and preserving it in a time capsule along with other artifacts

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Student standards for the Elementary Academy are listed according to the accepted divisions in the curriculum—mathematics, science, language arts, history, the fine arts, and so on—in order to account for the full range of knowledge and skills that students acquire. In practice, however, we frequently integrate the subject areas. For example, the themes of this academy spring mainly from science, history, and geography, and students read, write, speak, listen, and view in all areas of the curriculum.

Of course, not all teaching and learning is integrated. We never force curriculum integration for its own sake, but frequent integrated experiences help students comprehend the "big ideas" and relate them to everyday life. We aim all teaching and learning activities toward the goal of developing students intellectually, ethically, and physically so that they can take full advantage of school and the world.

Frequent integrated experiences help students comprehend the "big ideas" and relate them to everyday life.

Flexible Groupings. Teachers group students in the manner that is best suited to the tasks at hand. These flexible groupings allow students to reap the benefits of learning under optimum conditions.

Students generally work in same-age groups for mathematics, science, history, geography, economics, and civics. These groups may be divided into smaller groups, based on the same needs or interests, for brief periods of time. The groups are not rigid and are reorganized frequently. Students who would benefit from working in multi-age groups or with an entirely different age cohort for these subjects have the opportunity to do so. All students work in multi-age groups for activities in physical fitness and health, the arts, practical arts and skills, and character and ethics. Students use and refine their language skills in integrated projects that span the curriculum. They have regular opportunities to read and discuss great literature in both same-age and multi-age groups.

Students also work on projects in multi-age groups. They benefit from social interaction with older and younger students and learn from one another, too. They also

may work in same-age or multi-age cooperative-learning groups, in which all the participants work toward a common goal. Each student is responsible for making a specific contribution to the group, and teachers observe and evaluate this work.

Finally, the students work individually on independent projects and one-on-one with teachers and tutors. They also may decide, or the teacher may suggest, a quiet time for reading, thinking, and resting in a place designated for such activities.

Special Spaces for Learning. Teachers and students have access to attractive, well-stocked, and well-organized classrooms. A special place in each house, called the Collaboratory, contains a wealth of instructional resources. Students have ready access to the materials used by archaeologists, artists, authors, and builders. Presentation stations containing state-of-the-art technology for designing and making multimedia presentations are available as well.

In this academy, the Collaboratory expands to include the community outside the school building. Local museums, businesses, historical societies, and so on are integrated into the life of the school as additional hands-on labs and work sites.

All partnership schools and homes are connected via the electronic network we call the Common.

Access to Technology. Students use a variety of new technologies extensively at school and at home. After mastering certain computer basics, all students have personal computers installed in their homes. All partnership schools and homes are connected via the electronic network we call the Common. When a student, teacher, administrator, or family member sits down to work—at school or at home—he or she plugs the computer into the network (or dials it up with a modem) and is automatically on the Common. One's own digital folder, E-mail, and so on are all within "clicking" distance. It is each person's virtual desk and place within the digital school community, accessible from any computer that is plugged into the network.

For elementary students, technology provides a medium for "armchair travel" to distant places and times. As they look beyond their immediate environment, students use the computer to explore other worlds and to meet other people. They also use technology to write letters and notes, to make books, to E-mail messages and assignments, to play games, to watch videos, to record data, to scan objects, to make graphs, to take pictures, and to produce documentaries, art, and other exhibitions.

Elements of Surprise. Fire drills shouldn't be the only unannounced events in schools. So that school does not become predictable, teachers often organize special events. Students see that the real world is filled with unplanned happenings and they delight in the element of surprise. They also learn that the unpredictable can create problems that must be overcome and that the real world may require them to adapt to change.

Ongoing Assessments. Students are regularly assessed on their progress toward the standards for their academy. Teachers use a variety of techniques that frequently are embedded in the curriculum. Some of these assessments are for specific subject areas and some integrate various subjects, asking students to apply knowledge and skills from several disciplines to solve a problem.

Ongoing assessments provide teachers, students, and parents with clear and useful information regarding each student's progress.

These ongoing assessments provide teachers, students, and parents with clear and useful information regarding each student's progress. Student progress is reported on the Quarterly Learning Contract (QLC), an essential tool at each school. The QLC is the formal expression of an individualized set of expectations and obligations entered into by the school, the student, and parents. Teachers use this system to monitor progress and to prevent students from falling irretrievably behind. Throughout the course of each academy and at its end,

assessments certify that students have met the required standards and are ready for new challenges. These rich problems and assessments, some of which are integrated, provide students with opportunities to show what they've learned across the curriculum. Students who are late arrivals to the Elementary Academy may need more time to achieve the standards. We work this out with students and their families on an individual basis.

Teachers record students' progress in two formats: a large portfolio containing the child's work and copies of the Quarterly Learning Contracts with teachers' observations regarding progress; and an electronic portfolio, which is kept by the teachers and shared with parents. In this academy, every student also submits a final portfolio, called About Us. This portfolio contains assessments designed to demonstrate how well students have grasped the big ideas inherent in the academy's themes. We chose the title carefully, as it conveys that students learn about their nation, state, and community while learning about themselves. Teachers, parents, and the students can see what they've learned from their adventure in the Elementary Academy.

Standards for

History

Geography

IN HISTORY, STUDENTS WILL BE ABLE TO:

CONSTRUCT a time line that depicts key people, discoveries, inventions, and so on for a period being studied

EXPLAIN how we know what we know about history

DESCRIBE basic ways that human societies have changed over time, such as how technological innovations changed agriculture, education, and communication

COMPARE common features of human societies, such as families, religion, education, government, and economic activity

IDENTIFY people, events, places, and technological developments that had a major impact on U.S. history and state history

DESCRIBE how their community, state, and country compare with other communities, cultures, and nations studied

CONSTRUCT simple narratives showing relationships between two strands of historical development, such as the relationship between the railroads and westward migration

CONTRAST differing accounts of events in U.S. history, using a variety of firsthand accounts, myths, and historical narratives

DEMONSTRATE emerging analytic skills in relation to historical topics studied, including such skills as distinguishing fact from opinion, analyzing cause and effect, describing continuity and change, and formulating critical questions

DISCUSS differing historical interpretations on the basis of evidence and show willingness to revise opinions in light of new evidence or logical arguments

IN GEOGRAPHY, STUDENTS WILL BE ABLE TO:

LOCATE and describe places on Earth, using the basic features of common globes and flat maps, such as latitude and longitude

CONSTRUCT maps describing their everyday environment and local places of interest accurately and to scale

DESCRIBE major natural changes in Earth and its surface, including the formation of the planet as part of the solar system, climate changes and the Ice Ages, and continental drift

DEMONSTRATE basic knowledge of major physical and political features on Earth, such as continents, climate variations, major rivers, national boundaries, and capitals

EXPLAIN simple human and natural distribution patterns on Earth's surface, such as the location of mountain ranges and why people have tended to settle near water

DESCRIBE the relationships between location and human activities such as education, religion, and work

DESCRIBE how people and goods interact between and among places in the U.S., such as the relationship among transportation, trade, and communication

Geography

IN CIVICS, STUDENTS WILL BE ABLE TO:

EXPLAIN the importance of national symbols and ideas in their historical context, such as how the Statue of Liberty relates to Ellis Island and immigration

EXPLAIN concepts in the Constitution and Bill of Rights and the Declaration of Independence, including individual rights, separation of powers, and majority rule

DISCUSS concepts such as justice and compromise in the context of historical developments

DESCRIBE how Americans participate in the political process, including voting, campaigning, public debate, and community organizing

DISCUSS the historical diversity of the American people and how we have come together as one nation

Civics

IN ECONOMICS, STUDENTS WILL BE ABLE TO:

EXPLAIN basic economic concepts such as markets, money, specialization, and trade using straightforward examples from their own experience as well as state or U.S. history

DISCUSS how key features of the economy, such as business and banks, work

USE economic concepts such as supply and demand and trade in interpreting developments in their community, state, and nation

DISCUSS historical developments in the context of key economic concepts and features of the economy, such as trade, banks, and taxes

DISCUSS economic issues in accounts of events reported in the news and in their own personal experiences

Economics

READING MATERIALS

A Legend From Crazy Horse Clan
by Moses Nelson Big Crow
The Little House
by Virginia Lee Burton
A River Ran Wild by Lynne Cherry
The Courage of Sarah Noble
by Alice Dalgliesh
The Fourth of July Story
by Alice Dalgliesh
Walking the Road to Freedom: A Story About Sojourner Truth by Jeri Ferris
Johnny Tremain by Esther Forbes
Lincoln: A Photobiography
by Russell Freedman
The Wright Brothers: How They Invented the Airplane
by Russell Freedman
The Cabin Faced West by Jean Fritz
George Washington's Breakfast
by Jean Fritz
A History of Us Series by Joy Hakim
Grandfather's Origin Story: The Navajo Beginning by Red Hawk
The Chinese American Family Album
by Dorothy and Thomas Hoobler
Tell Me a Story, Mama
by Angela Johnson
Harriet and the Promised Land
by Jacob Lawrence
The Gettysburg Address
by Abraham Lincoln
A More Perfect Union: The Story of Our Constitution
by Betsy and Giulio Maestro
Suzanne Hand and Paleontology
by Jill Morriss, Elaine Thornton, and Leaellyn Rich
Ashanti to Zulu: African Traditions
by Margaret Musgrove
American Tall Tales
by Mary Pope Osborne

History, when presented as a story well told, makes the past come to life, engages students' interest, and helps them learn facts and gain important knowledge about the world and its people in vivid and memorable ways. History's narrative style makes it the perfect vehicle for integrating disciplines within the social sciences and across the entire curriculum.

Dinosaurs to Discovery, the Elementary Academy curriculum, takes advantage of history's narrative attributes and is structured around three sequential themes: A Distant Place, My Place, and Our Place. Each theme corresponds to one year in the academy. These themes, drawn mainly from history and geography, have importance and application to every subject area. The balanced breadth and depth of Dinosaurs to Discovery strengthens students' cultural understanding, develops their analytic thinking skills, leads to an appreciation for the excitement of history, and helps them understand the concept of place that is central to the study of geography.

History's narrative style makes it the perfect vehicle for integrating disciplines.

The chart on pages 16–17 illustrates how cross-curricular lessons, projects, and activities spring from the themes of A Distant Place, My Place, and Our Place.

A Distant Place

In the first year of Dinosaurs to Discovery, students examine the natural history of Earth and the beginnings of civilization. They journey back to a time when dinosaurs ruled the world and pose such important questions as, What was Earth like before humans inhabited it? How did the dinosaurs disappear? How do we know what we know about the world before we were here?

Students find answers to some of their questions in the work of great anthropologists, archaeologists, scientists, mathematicians, and researchers. They learn that humans have developed tools and techniques for exploring the past and begin to apply some of those same techniques in their own study of history as they "dig up" the past.

> Students examine the natural history of Earth and the beginnings of civilization.

In conjunction with the science curriculum, students study the beginning of Earth within the solar system, its cooling, and the ongoing Ice Ages. They draw maps that describe changes in the shape of the land and continents from the earliest times up through the present. They gain a sense of chronology by working as a class to construct their annotated Dinosaurs to Discovery time line.

Throughout the year, students work on sections of this time line that correspond to the topics they are studying, writing in relevant facts and other interesting information as

they go along. The units of time are represented in proper scale so that students get an accurate sense of the relative proportions of historical periods.

During this year, students study the dinosaurs in depth, investigating their enormous size, their diversity, and their duration on Earth. This lively investigation spans the curriculum. For example, students read both fiction and nonfiction books about the dinosaurs in language arts and distinguish fact from fiction; they develop plausible theories about their disappearance and investigate fossil remains in science; and they use math to measure the dimensions and create authentic clay models of the dinosaurs to a scale they calculate.

Using geography, students also identify and analyze basic ways that humans interact with one another and with the environment. They begin with the first humans, identifying the location of fossil finds on maps and tracing early migrations. Working in groups to dig up the past, students note the locations of the first human settlements and look for conditions that might have encouraged these settlements, such as adequate rainfall, nearby rivers, and fertile land.

From here, students explore other questions, such as, What did ancient peoples believe about the natural world? and How do their beliefs contrast with what modern science has revealed? Stories from the Hebrews, the Greeks, the Egyptians, and other ancient civilizations provide springboards for much of this portion of their study.

In the area of economics, students examine examples of trade from the earliest human times to the present. Through great stories and first-person accounts, they get a taste of the benefits of the free exchange of goods and services and of the adventure and exploration that have historically accompanied trade since before the time of Marco Polo.

Students study the dinosaurs in depth, investigating their enormous size, their diversity, and their duration on Earth.

Through stories and biographies, students begin to develop the ability to perceive the past as experienced by the people who lived it and also learn how present-day cultures in diverse parts of the globe relate to ancient civilizations, as they study how people have adapted to their environment over time (such as in the types of homes they built or the clothes they wore).

My Place

During the second year of Dinosaurs to Discovery, students work closer to home as they study the history of their own state and community and explore how people in their immediate surroundings have adapted to and changed the environment. But unlike some traditional curricula, My Place takes the same near-to-far approach that characterizes Edison's history and social sciences program in every academy.

Students study their own community and state, but always in the context of the larger world.

Students study their own community and state, but always in the context of the larger world. In this way, they have opportunities to explore broader questions, such as, How do people live? How has technology changed the world? and Why do humans search for adventure?

As they examine how, when, and by whom their community was founded, they learn about other great explorers in history. They research the lives of their own local heroes while reading about the accomplishments of leaders and heroes around the world and throughout time. And they examine their own beliefs about the world today,

by contrasting them with what people believed during other periods in history. Throughout their study of My Place, students apply the tools and techniques they learned in year one about digging up the past.

During this second year, students continue to maintain a class time line, but now they focus on the history of their community, unfolding in twenty-year intervals. Much of the factual information listed on the time line relates to another major project that students create in the Collaboratory's publishing center: a travel guide to their community.

In their My Place travel guides, students write about, draw, and photograph items of local interest, including historic graveyards, buildings, battle sites, and birthplaces of well-known people. The guide also includes maps of the community, efficient travel routes, important phone numbers, listings of area restaurants and shops, and information on other types of services visitors might find useful. In keeping with our near-to-far approach, students share their completed travel guide with students in other parts of the country and around the world, via Edison's electronic network.

By examining and participating in their local economy, students gain an understanding of basic economic concepts.

Economics is another important element in students' study of My Place. By examining and participating in their local economy, students gain an understanding of basic economic concepts such as supply and demand, competitive markets, specialization, and trade. Students learn to identify and apply these concepts in a variety of ways—from visiting local establishments and observing how they compete for customers to exploring computer software programs that simplify the tasks of making economic decisions.

During this year, as students continually compare and contrast their community with the larger world, they gain an important understanding of where they fit in space and time. And by studying how their community was populated and where their own ancestors came from, they prepare for their intensive focus on American history in year three of Dinosaurs to Discovery.

Our Place

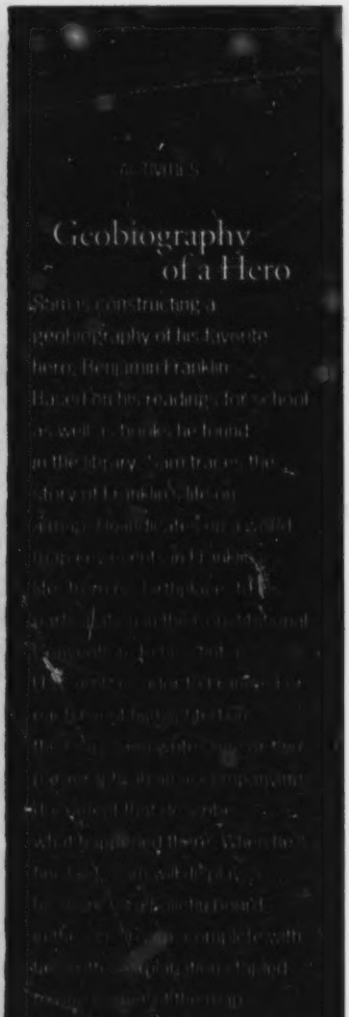
The final year of Dinosaurs to Discovery, Our Place, follows naturally from the previous year. Our Place focuses on American history as students learn that our country is a place where different civilizations and cultures contend, mingle, and exchange ideas, art, and ways of life. In the course of their study, students discover how Americans today are similar to and different from our country's founders.

This year of American history places strong emphasis on biography. From the Puritans to the pioneers, from George Washington to Harriet Tubman, students read about and learn from the lives and contributions of great people in the American story, starting with the first Americans—Native Americans. The peopling of the United States is featured prominently on the students' Dinosaurs to Discovery time line, which now focuses on twenty-year intervals of American history.

Students look at key individuals and events in five major areas: First Americans and Colonization, U.S. Revolution and the New Nation, Slavery and Civil War, Industrialization and Societal Change, and The Great Depression and World Wars I and II.

In their study of Our Place, students get their first chance to apply the economic concepts they learned in the previous year to our nation's economy and to develop their understanding of important features of the economy, such as banks, taxes, and unemployment. Historical events, such as the Boston Tea Party, contrasting economic development of the North and South, and the Depression, all illuminate and are illuminated by basic economic concepts.

Geography in the third year is closely coordinated with U.S. and state history. Students use maps to gain a better understanding of the historical events they read about, such as Cornwallis's surrender in the Revolutionary War or African Americans' migration to northern cities. Students also use maps to understand patterns of human



development or simple changes in the environment over time. Students might examine maps at different periods in U.S. history to get a sense of the increasing settlement of the West, or they might compare maps indicating forest coverage in different centuries to analyze how humans have affected the environment.

Students also begin serious study of the U.S. government and democratic politics, beginning with the founding of the republic and the perceived wrongs committed by the British that led to the Declaration of Independence. They study the form of government embodied by our Constitution and Bill of Rights and come to appreciate the boldness of the American experiment in its historical context. They examine limitations in our practice of democracy and the ensuing struggles to bring justice to all Americans.

The history of American democracy is best told at this level through the stories of those Americans who took part in its formation.

The history of American democracy is best told at this level through the stories of those Americans who took part in its formation. For that reason, students read the story of Thomas Jefferson, the author of the Declaration of Independence. They read the words of Frederick Douglass, a leading voice for the abolitionist movement, and Susan B. Anthony, a leader of the women's suffrage movement. Students discover the diverse heritage of the American people through the first-person accounts of those who came to this country, from the settlers and immigrants who eagerly came to these shores, to the slaves who arrived here in chains.

After their close examination of the past and present, students spend their last weeks in this academy considering the future. Drawing on their knowledge of people's basic needs and desires throughout history, they design a city of the future to illustrate their predictions about the world of tomorrow. Finally, students compose their own letters to the future describing their lives in the Elementary Academy and listing their hopes and dreams for future generations. Students bury their letters in a time capsule along with other artifacts somewhere on the school grounds.

Throughout their three years in the academy, students meet dozens of people from history who have had a profound impact on the world. The following list illustrates the kinds of people students meet.

31 Standards for History, Geography, Civics, Economics

The Greats: Historical Figures

FIRST AMERICANS Native Americans

EXPLORERS Leif Ericson, Marco Polo, Christopher Columbus, and Ferdinand Magellan

PRESIDENTS George Washington, Abraham Lincoln, and Franklin Delano Roosevelt

REFORMERS Horace Mann, Frederick Douglass, Susan B. Anthony, and Martin Luther King, Jr.

Assessment in Action

As part of their final portfolio assessment, students jointly develop and "publish" a volume on how their class fits into the United States. Each student interviews a parent of one other student in the class to identify at what point his or her family, or ancestors, came to the United States and the reasons for doing so. Those families that are not first-generation immigrants trace and describe their ancestors' history in the United States until the present. Students individually write up their findings into a five- or six-page chapter and then work cooperatively to edit these into a single volume. Each section also tells the story of where students and their families live currently and how they came to their Edison partnership school.

The Edison Environment for History and Social Science

INTRODUCES children to the institutions and symbols of American political processes and history

TAKES a near-to-far approach

CONNECTS principles to students' everyday experiences

BRINGS the world to the classroom with new technologies

ENCOURAGES students to look beyond their immediate world

DEVELOPS multicultural understanding and historical imagination

Standards for Language Arts

IN READING, STUDENTS WILL BE ABLE TO:

READ a variety of self-selected and assigned materials from the elementary reading list with fluency, independence, and accuracy

SELECT, read, and identify elements from a wide variety of genres (classics in literature, contemporary fiction, nonfiction, poetry, drama, biography)

EXPAND their repertoire of reading strategies to include alternative means of decoding, constructing meaning, and adapting to types of material encountered (fiction, expository text, functional print)

DEMONSTRATE critical reading skills by identifying elements of author style, point of view, propaganda, fact versus fiction, problem-solution, and cause and effect

USE prior knowledge to comprehend a variety of reading materials

ANALYZE elements of magazines, newspapers, schedules, brochures, and other types of expository and functional print

CONDUCT RESEARCH by identifying, selecting, summarizing, and synthesizing information from a variety of appropriate primary and secondary resource materials, and accessing and using information from electronic sources

EXPLORE the dynamics of language by investigating the origin of words, word meanings and usage, and the ever-changing nature of our lexicon

EXPAND vocabulary by using context cues, dictionaries, thesauruses, and electronic word banks

MAINTAIN an annotated personal log or record of material read

IN LISTENING AND VIEWING, STUDENTS WILL BE ABLE TO:

ENGAGE in a wide variety of listening experiences such as the reading aloud of literature, reports, audio and video broadcasts, demonstrations, and panel presentations

ENGAGE in a wide variety of viewing experiences such as news programming, video productions of books read, and films related to areas of study

UNDERSTAND the various roles and responses as a member of a listening and viewing audience (to react, respond, praise, and question)

Standards for
Speaking

DEMONSTRATE listening and viewing comprehension by paraphrasing, questioning, commenting on, and reacting to material heard

DEMONSTRATE the ability to focus and attend, to ignore distracting stimuli, and to fit the message into existing cognitive structures

ESTABLISH prelistening and viewing purposes and questions

TAKE NOTES during presentations to reinforce comprehension

DISCUSS the application of listening strategies before, during, and after the experience

LISTEN and view critically for errors and false claims

PRODUCE a videotape and identify the steps involved, from preparing a script to editing the final tape

IN SPEAKING, STUDENTS WILL BE ABLE TO:

ENGAGE in a variety of oral language activities ranging from informal conversations and discussions to oral presentations, including speeches, panel presentations, interviews, and reader's theater

ORGANIZE thought and language in order to present material with clarity and cohesion

DEVELOP effective presentation skills, such as stance, use of voice, use of visual aids, style, and body language

MEMORIZE and recite passages from poems and at least one substantial poetry selection

RETELL familiar stories with coherence and liveliness

TELL original stories

PRESENT dramatic renditions

ENGAGE in role-playing

IN WRITING, STUDENTS WILL BE ABLE TO:

WRITE in a variety of forms, including autobiographical, informational, and cause and effect, for many purposes

ADJUST writing to the intended audience

WRITE a five-page report on a curriculum-related topic, demonstrating the ability to access information, take notes, prepare an outline, and organize materials

DEVELOP the ability to create excitement in writing a research report, a letter, or a story

IDENTIFY parts of speech

DEMONSTRATE ability to use rules, conventions, and correct spelling

REVISE a piece of writing to improve coherence, clarity, and correctness, using feedback from others and self-review

Reading

In the Age of Adventure, language arts becomes an exciting pursuit that opens doors and minds to further learning as students explore a wealth of written work, video materials, and the spoken word from Dinosaurs to Discovery. Building on the foundational skills and strategies developed in the Primary Academy, students are ready to use reading, speaking, listening and viewing, and writing as they gain knowledge, encounter and react to new ideas, critically analyze content, and construct meaning to expand their horizons.

Literature comes to life as students in the Elementary Academy read and respond to great books from classic and contemporary literature. Here are just some of the Greats that students read:

The Greats: Literature

Coyote Goes Hunting for Fire: A California Indian Myth by Margery Bernstein and Janet Kobrin

Beat the Story-Drum, Pum-Pum by Ashley Bryan

The Wind in the Willows by Kenneth Grahame

Seven Korean Sisters by Jae Hyun Hahn

The Dream Keeper by Langston Hughes

A Wrinkle in Time by Madeleine L'Engle

Pippi Longstocking by Astrid Lindgren

The Drinking Gourd by F. N. Monjo

My Brother Sam Is Dead by James C. Collier and Christopher Collier

Pollyanna by Eleanor Porter

The Little Prince by Antoine de Saint Exupéry

El Chino by Allen Say

Charlotte's Web by E. B. White

"The Tiger" by William Blake

"Dreams" by Langston Hughes

"Afternoon on a Hill" by Edna St. Vincent Millay

"I Hear America Singing" by Walt Whitman

Teachers create an environment that encourages students to read between and beyond the lines and to relate new concepts to their own lives. Students analyze and react to content through discussion in literature response groups, entries in response journals, and participation in collaborative projects that extend themes and concepts to students' lives.

In a society tied to print, students have opportunities to explore the myriad forms that written communication takes. They learn to adjust their reading strategies to construct meaning from such diverse sources as a bus schedule, a mystery novel, an article in *National Geographic*, or a poem by Langston Hughes.

Students also explore the intriguing and dynamic development and use of language. They examine how words come into being (*Kleenex, Astroturf*), how words can change or take on new meanings over time (*rap, rock*), and how words can be used to persuade (editorials, advertisements). As they encounter the many unique ways that writers communicate, students become familiar with the use of diverse styles and figurative language. Because students will use the same patterns and structures in their own writing that they have been exposed to in print, their writing becomes rich with similes, metaphors, and personification.

Engaging in dialogue with real authors and illustrators is part of the Edison adventure. Students gain insight about how stories come into being and about the actual process of composing and publishing. In one intensive project, students engage in an in-depth study of the life and accomplishments of a chosen author or illustrator. The finished project becomes one of the students' own published works.

In a society tied to print, students have opportunities to explore the myriad forms that written communication takes.

Because we define communication in its broadest sense—as the way that messages are sent and received—the adventure continues as students use electronic networks to get access to and use information and as they read charts, graphs, maps, cartoons, codes, puzzles, and other forms of graphic information. Students are also exposed to the diversity of languages as they learn how people read Braille, American Sign Language, music, and mathematics.

Classrooms in the Elementary Academy are rich with accessible resources of all kinds and at all levels. From CD-ROMs to the *Guinness Book of World Records* and *Sports Illustrated for Kids*, students are surrounded with choices that motivate their quest for information.

Listening and Viewing

In the quest for information about the world, listening and viewing are key. In the Elementary Academy, students discover that listening is far more than hearing and viewing is far more than seeing. They refine their ability to convert spoken language and visual representations into meaning through daily experiences as a listening and viewing audience. As they tune in to teachers, peers, and a variety of media, students become active and thoughtful viewers and listeners.

During read-aloud time, students react and respond to quality literature, making this a "prime time" for daily practice in listening skills. Students also have frequent opportunities to listen to reports, panel discussions, photographic essays, and stories presented by their peers.

Because today's "vid kids" are so accustomed to getting information from television, we emphasize skills that make them attentive and selective viewers. Video presentations of people and places in the past, present, and future can bring the study of history and other subjects to life; but students need to be clear about what is real and what is not. To make sure they understand the difference, elementary students each produce a personal video. In the process, they gain a clearer understanding of film techniques and how they can affect the way material is presented and interpreted.

Listening and viewing are extremely important inside and outside of the classroom. Teachers draw from the many quality videos and interdisciplinary teaching materials available from the Corporation for Public Broadcasting. All of the programming students watch is designed to help them participate more thoughtfully in an increasingly visual world. Students gain an appreciation for listening and viewing and develop effective strategies for "getting the message."

Speaking

Elementary students also have many opportunities to give the message. They use speaking as a mechanism for presenting information in a variety of formats and settings. As senders of messages, they strive for coherence, clarity, and a compelling manner of speaking. They continue to refine the art of storytelling and recognize the historical antecedents of the oral tradition. Students have many opportunities to "stand and deliver" lively and informative oral presentations.

BEST COPY AVAILABLE

Writing

Elementary students refine their ability to write what they speak. Writing across the curriculum is an important tool for gaining understanding and for communicating what they have learned. Students write for a variety of purposes: to report in science; to compose stories, riddles, jokes, poems, and letters; to summarize books, articles, and news reports; and to prepare justifications for their solutions in mathematics.

At this age, students devote attention to revising and improving their writing in terms of style and correctness. As their writing becomes more complex, the word processor is an even better friend to students than it was earlier. They use the computer not only to edit, but also to maintain their daily journals.

As students read widely, they gain an appreciation for the craft of writing. Essayists, journalists, diarists, and novelists provide many splendid adventures in this academy, and students want to create the same kind of excitement and interest in their own written work.

Assessment in Action

Each student's personal literacy portfolio provides an extensive profile of self-selected accomplishments for the school year. Each portfolio contains, among other items, an annotated reading log of material read at school and at home, audiotapes of oral reading and presentations, checklists on improvement in the mechanics of writing, letters to authors, copies of "personal bests" in reading and writing, and a mid- and end-of-the-year evaluative essay on "I Couldn't...But Now I Can," which identifies specific reading, speaking, listening and viewing, and writing competencies.

Teachers also compile a portfolio for each student that shows progress and

accomplishments. Records of individual conferences; samples of written work; videotapes of students as they engage in language activities; checklists of growth in word usage, spelling, grammar, and mechanics of writing; and photographs of projects completed combine to reflect a holistic picture of literacy. We provide the environment, resources, and teaching strategies that support a lifelong adventure in language arts for all students.

The Edison Environment for English Language Arts

OPENS doors and minds to further learning

STRESSES speaking, listening, and viewing

BUILDS on basic skills

BRINGS the world to the classroom with new technologies

FOSTERS a love of reading

STUDENTS WILL BE able TO:

SPEAK in increasingly sophisticated sentences, demonstrating the pronunciation and intonation of native speakers

USE Spanish words for frequently used English words

COUNT as high in Spanish as they do in English

WRITE simple sentences and short paragraphs in Spanish as well as they can speak them

INTERACT comfortably with teachers and peers in Spanish on well-structured topics

ASK and answer questions spontaneously in Spanish

LISTEN to and read more sophisticated stories, songs, and poems in Spanish

LISTEN to and understand videos and television programs designed for children in Spanish

PROVIDE background information on people and places in the Spanish-speaking world

Standards for Spanish

READING MATERIALS

El Duende y el Robot by Fernando Alonso

El Viejo Roble by Fernando Alonso

Cuentos de las Cosas Que Hablan by Antonio Robles

Historia Verdadera de una Princesa by Ines Arendondo

Risas, Poesías y Chistes by Consuelo Arnijo

El Pájaro de la Verdad y Otros Cuentos by Fernan Caballero

El Tigre y el Rato by Elov Cesareo De Arredondo

Nuestra Señora de Guadalupe by Tomie De Paola

Abuela by Arthur Dorros

Los Tres Amigos by Gustavo Ferrada and Francisco Garmendia

Por la Costa Caminos de Cuentos by Gil Hernández

Canciones y Poemas para Niños by Federico García Lorca

Viaje de Ondas y Colores by Antonio Granados

Winnie de Pooh by A. A. Milne

El Señor Cerdo by Carmen Posadas

La Abeja Haragana by Horacio Quiroga

ELECTRONIC MATERIALS

English Discoveries Video Linguist (Cubic Media, Inc.)

EZ Language (Future Trends Software)

TriplePlay Spanish (Syracuse Language Systems)

Spanish

Strong second-language skills are key to the adventure of using language to learn about the world. In the Elementary Academy, we continue to encourage students to appreciate languages and to use their language abilities as they explore a variety of real-world situations. Students who have attended the Primary Academy have a strong foundation for Spanish fluency. Building on these skills, elementary students are ready to read, write, and converse more extensively in Spanish. In order to be informed communicators, they also develop their awareness and understanding of the people and places where Spanish is spoken.

Students have frequent opportunities to apply their basic Spanish language skills and to develop their vocabularies through regular conversations with native speakers. For example, students use the Edison computer network to correspond with pen pals in Spanish-speaking countries. Continual practice and interaction with others helps students reach a more sophisticated and integrated level of proficiency in Spanish and to understand the cultural context in which Spanish is spoken.

Students who are new to Edison's program or who have not mastered a basic knowledge of Spanish receive tutorial assistance from the language specialists and from other students. Similarly, students whose first language is Spanish begin or continue ESL instruction in a setting that is appropriate to their needs. Teachers and parents work together to determine and monitor the pace of each student who is new to Edison's language program.

We emphasize that every student must make a conscious effort to learn Spanish. This means understanding that they and not their teachers are responsible for their progress. We constantly encourage students in their pursuit of a second language in order to inspire them to learn more on their own and to value language learning throughout their lifetimes.

We provide rich and varied materials for students to use in their adventure of learning another language. These include Spanish books of new and familiar stories, maps of countries, states, and neighborhoods where Spanish is spoken, Spanish songs, and Spanish videos. Students listen to audiotapes and practice imitating new words and sounds. They read longer stories from a more advanced collection of books, and they write reports and stories using rich and correct sentences. Students also view current Spanish videos and television programs that help them understand spoken Spanish and provide them with authentic information about Spanish-speaking places. This helps students expand their knowledge of place, a concept that integrates much of the curriculum in this academy. These materials also act as springboards for daily conversations in Spanish.

Teachers and parents work together to determine and monitor the pace of each student who is new to Edison's language program.

We encourage students' curiosity about languages and their desire to learn Spanish by making their learning experiences fun. We emphasize activities that affirm students' increasing proficiency while nurturing their natural curiosity about different languages and cultures. These activities and projects integrate students' developing language skills by providing opportunities for them to apply those skills in context.

Students develop their Spanish skills further through intensive projects. In one such intensive, each student studies a typical day for an eight-, nine-, or ten-year-old living in a Spanish-speaking country. The students interview their subjects via mail or electronic correspondence to find out what they do each day. Later students use various media to report on what they learned.

Assessment in Action

In one concluding assessment in students' study of My Place, they create tourist and information brochures about their community, entirely in Spanish. The brochures include maps with highlighted points of interest, drawings and photographs, and, when possible, the names and locations of Mexican and Latin American markets and restaurants.

The Edison Environment for

Spanish Language Arts

STRESSES interaction with native speakers
and appreciation of other cultures
INCLUDES special instruction for English as a Second Language students
ENCOURAGES students' curiosity and pursuit of learning languages

Standards for the Arts

Standards for
Visual Arts

IN MUSIC, STUDENTS WILL BE ABLE TO:

SING a varied repertoire of songs, with attention to tempo, pitch, and matching dynamic levels with others

PERFORM simple melodies, rhythms, and chord patterns on a recorder or other appropriate instrument

CREATE and improvise simple songs, melodies, variations, or instrumental pieces to accompany readings or dramatizations using voice, instruments, computers, and nontraditional sounds

DEMONSTRATE basic ability to read and notate music, such as notes in 2/4, 3/4, and 4/4 meter signatures, simple pitch notation, and symbols for dynamics and tempo

LISTEN, note, and discuss with peers personal responses to music from various styles, including different composers, genres, and periods

RECOGNIZE the sounds of most orchestra and band instruments

IDENTIFY examples of common musical purposes and methods from diverse cultures, such as patriotic celebration or using percussive instruments to keep a beat

IDENTIFY connections between music and other disciplines, such as the use of music in dance and drama, or the mathematical nature of meter

IN VISUAL ARTS, STUDENTS WILL BE ABLE TO:

REPRESENT through a variety of methods (drawing, painting, sculpture, collage, photography, and printmaking) images based on inanimate objects, human faces or figures, and imagination

CREATE works using nontraditional materials or methods (such as wire, found objects, mixed media, video, and computers)

MODEL works after important examples of art

PRESENT and discuss works with peers, including strategy and choices made

EXPLORE how artistic choices such as medium, color, texture, contrast, and form are used for aesthetic purposes and how line and form create the illusion of space in two-dimensional works

IDENTIFY classic genres such as portraiture, still life, landscape, and examples of abstract and nonrepresentational art

EXAMINE works featuring various styles of drawing, painting, photography, sculpture, and architecture from periods and places being studied

RELATE the basic elements of visual arts to other artistic disciplines, such as theatrical set design, product packaging, and fashion

IN DRAMA, STUDENTS WILL BE ABLE TO:

REPRESENT through drama ideas based on literature, history, imagination, personal experience, or other artistic disciplines

PERFORM short dramatic scripts based on a particular theme, exploring techniques such as improvisation, monologue, impersonation, and characterization

REPRESENT familiar feelings through dramatic action, such as happiness, fear, or confusion

PERFORM various roles and responsibilities relevant to creating drama in different media, from direction, set design, and writing dialogue to video shooting and costuming

OBSERVE dramatic performances, record personal responses and preferences, and discuss with peers using appropriate vocabulary

COMPARE the use of different media in presenting dramatic performances, including theater, film, and television

RECOGNIZE aspects of drama in contemporary life

ANALYZE how dramatic literary interpretations differ from the original work

IN DANCE, STUDENTS WILL BE ABLE TO:

EXPERIENCE and identify a range of dance styles, such as folk, tap, ballet, modern, ballroom, and pantomime, demonstrating skills in at least one

CREATE and perform dances based on imagination, their own experiences, or concepts from other sources, such as history, literature, and other arts

DEMONSTRATE competence in basic movement skills, such as skipping in a curve, forming shapes, leading/following a partner, and moving to a musical beat

IMPROVISE to discover or invent dance movements, to solve movement problems, and to create dance performances

Standards for
Dance

PERFORM an interpretation of a short dance, discuss their dance with peers, and teach it to classmates

OBSERVE a professional dance performance, record thoughts and reactions using appropriate terminology, and discuss with peers

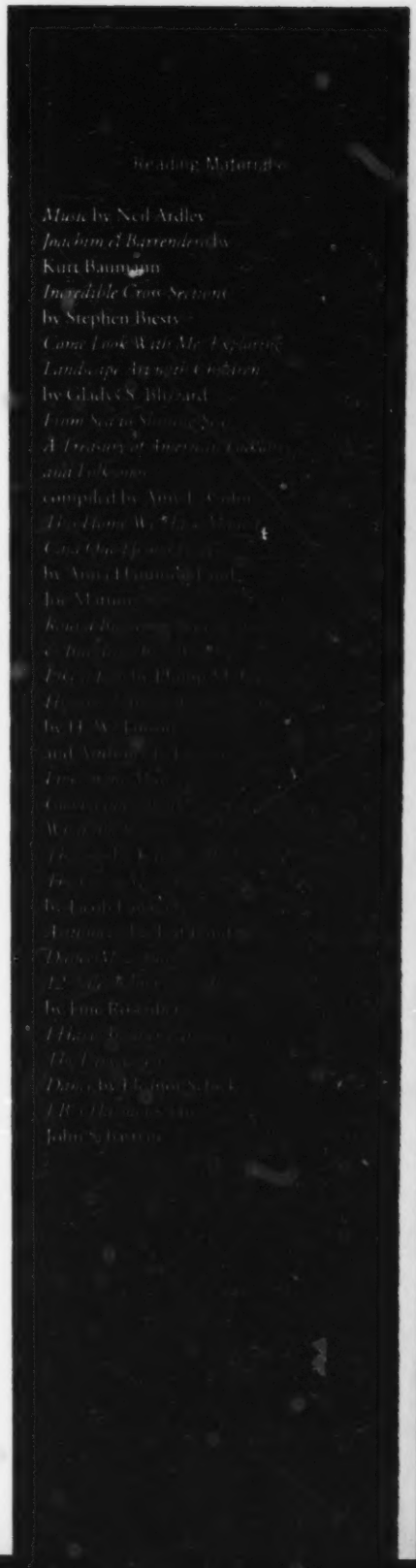
DISCUSS examples of common dance functions and practices in diverse cultures, such as in religious ceremonies and drama

DESCRIBE connections between dance and other art forms and its relationship to personal health and fitness

When students experience the wonders of art, they discover the enormous potential of human creativity. Throughout the Elementary Academy, students apply the basic skills they mastered when they were younger and use that foundation to create, analyze, and interpret art on a more sophisticated level. They connect their study of the arts to the places that inspired people to sing, draw, act, and dance.

In addition, they realize that art has contributed to how people have adapted and changed over time. Students focus on the four major areas of artistic expression: music, the visual arts, drama, and dance. They create and perform a wide range of artistic works across the curriculum. They discover how art and its portrayal of human

nature have changed through time and how the works of diverse cultures have common themes and subject matter. Finally, students connect their growing knowledge about the arts with the academy theme of discovery to further understand the important role of creative expression in the lives of people past and present.



Music

Music is truly a universal language. In the years preceding the Elementary Academy, students experimented with the building blocks of music and became familiar with a variety of musical styles and forms. They developed listening skills that prepared them to explore music much more seriously than when they were younger. For example, they can understand the meaning of the songs they sing, identify musical symbols, and listen for musical elements such as rhythm and pitch. These skills are important to young musicians as they begin to participate in more challenging musical endeavors.

Students gain a wide understanding of various musical forms and styles, such as classical, jazz, blues, and rap. We stress listening and encourage students to make connections across musical styles and eras. For example, in studying jazz, students draw parallels between the blues, gospel, and ragtime and experiment with syncopated rhythms by clapping, singing, and playing various percussion instruments.

Students expand their knowledge of the world's music by listening to and experimenting with traditional and nontraditional instruments. Songbooks from many cultures

Reading Materials

Draw! by Kim Solga
Paint! by Kim Solga
Theater Games for the Classroom by Viola Spolin
River by Bill Staines
The Cave Painters by Percy Trezise
Painting: A Young Artist's Guide by Elizabeth Waters and Annie Harris
Amazing Buildings by Paul Wilkinson

ELECTRONIC MATERIALS

Rock and Bach Studio (Binary Zoo)
The Treehouse (Broderbund)
Kids Studio (Cyberpuppy Software)
Davidson's Kid CAD (Davidson and Associates)
Fairy Tale Theater (Disney)
KidsNotes (Great Wave Software)
Shakespeare's Animated Tales (HBO)
Musical Instruments (Mac Microsoft)
The Miracle Piano Teaching System (Software Toolworks)
Cinemania '94 (Microsoft Corporation)

and countries provide examples of compositions for students to sing, study, and discuss. They may listen to the traditional music of countries they are studying in geography, or learn to sing a Gullah folk song in conjunction with American history. Students gain a heightened appreciation of music as they discuss the meaning and context of musical pieces while discovering music's place in the lives of people today and throughout history.

We stress listening and encourage students to make connections across musical styles and eras.

Edison's signature singing program is the centerpiece of the music curriculum. It offers students an opportunity to use their voices in a celebration of self-expression. For example, after listening to a wide range of compositions by Duke Ellington, students may join together in a choral rendition of "My People," Ellington's masterly salute to the history of African Americans. Students may form duets or ensembles to sing for parents and other visitors, or they may perform for the children in the Readiness and Primary academies.

Through song, students are introduced to many of the Greats in the world of music. Here are just some of the great songs they'll sing:

THE GREATS: SONGS

TINA SINGA
THIS LAND IS MY LAND
FOLLOW THE DRINKING GOURD
'TIS A GIFT TO BE SIMPLE
LIFT EVERY VOICE AND SING
YANKEE DOODLE
WHEN I FIRST CAME TO THIS LAND
ERIE CANAL

Technology and tradition work in harmony in the Edison music program. Students discover how to make music with computers and simple instruments such as the recorder. Their adventures as artists and explorers of all subjects are captured in the spirited theme song for this academy, "Feeling Fine" by Billy Straus (© 1992, Billy Straus Music, NYC);

Close your eyes, pick a place
Maybe in the ocean, or maybe on the driest land
Now begin your journey with the world at your command

Visual Arts

We emphasize the visual arts (drawing, painting, sculpture, printmaking, collage, design, and photography) in the Elementary Academy and connect them to other topics of study. For example, students examine the early history of photography while researching their family's heritage in connection with a larger unit on immigration. As part of the science curriculum, they draw, design, and sculpt dinosaurs out of clay. In their study of A Distant Place, students look at prehistoric cave paintings to see how early humans used art to communicate and express what they saw in their environment. By merging the visual arts into other areas of study, students discover that art doesn't exist and is never created in a vacuum, but is an outgrowth and reflection of societal events and cultural happenings.

Students increase their knowledge of artistic principles, elements, and terminology by looking at wall posters of great works of art. They also translate their observations into original artwork. They learn to incorporate elements such as form, line, color, and space by modeling their own work after the Greats, a formal learning approach that is still used in many postsecondary art academies. For example, students may use a painting of van Gogh's bedroom as a springboard to create large-scale murals of their own bedrooms, an activity that blends with their study of My Place. In their study of the Plains Indians, students might create large-scale "hide" paintings with brown butcher paper to reinforce the importance of the buffalo to that Native American culture. As they imitate others' works and practice basic techniques, students improve their own creations and learn to appreciate the artistic talent of others.

Students use multimedia technology and other audiovisual materials available in the Collaboratory as additional ways to explore the arts. They might draft a building on a computer or tour the National Gallery of Art via interactive laser disc. Teachers conduct slide shows where students can examine a work of art in its entirety and in detail. Access to such advanced technology helps students recognize the differences and similarities between artistic periods and styles, explain an artist's technique, and trace the historical development and importance of a particular style to art today.

As elementary artists, students begin to use advanced tools and manipulate raw materials in more mature ways.

As elementary artists, students begin to use advanced tools and manipulate raw materials in more mature ways. They experiment with different types of paint, like watercolor and tempera, and make prints using processes such as etching, woodcut, and engraving. They explore three-dimensional techniques such as collage and relief, and sculpt using media like clay, wood, papier mâché, and found objects. Children learn that art making is a process: beginning with an idea or inspiration, making the idea happen, and cleaning up when they are finished. They begin to realize that art requires clarity of thought and concentration to attain a high level of quality.

We encourage students to share and discuss their creations with others at each stage of the artistic process. These critical "workshops" help students improve the overall strength of their work and contribute to its emotional impact. Through the visual arts, students develop and sharpen the skills that will foster an appreciation and awareness of the aesthetic elements in the world around them.

Drama

Drama transports students to a vast arena of adventure and discovery. They are beginning to add complexity, depth, and breadth to their basic need to "make believe," a need that was nurtured during their years in the Readiness and Primary academies. They explore new ideas, tackle difficult problems, and understand the feelings that they have in this stage of their development. They experience the joy that comes from having the discipline and courage to perform before an audience. They are able to express their thoughts and emotions through dramatic play and they role-play a variety of characters from literature and history. By experiencing the doing and viewing of drama, students can express the wide-ranging spectrum of human behavior, conflict, and emotion.

By performing before the class, students develop and strengthen their own sense of voice, physicality, and movement.

Drama allows students to board a time machine and travel to a multitude of historical destinations to encounter important people and wonderful places. Students might re-create the signing of the Declaration of Independence or sense drama by becoming a young pioneer like the children in *Sarah, Plain and Tall.* Visual art, music, and stories might be used to stimulate improvisational performances or one-act plays.

Students learn the value of teamwork by writing, producing, directing, staging, and performing dramatic works. For example, in developing a series of vignettes to illustrate the history of American inventors, one student might read a poem about Benjamin Franklin and another might role-play the life of the young Thomas Edison. Students offer each other critical and constructive feedback, suggest ways to strengthen a performance, and discuss their reactions, likes, and dislikes. By performing before the class, students develop and strengthen their own sense of voice, physicality, and movement. Giving and receiving criticism teaches them to respect and accept attitudes, values, and tastes different from their own.

Critical viewing skills are essential in this age of visual information. Drama is present in everyday life as well as in the media. Students recognize how drama manifests itself in their lives, in everything from weddings and parades to music videos and commercials. Students in the Elementary Academy become familiar with dramatic elements by watching the great performances, from both live community theater and videotape. Dramatic literary adaptations bring books to life, such as the film of *The Secret Garden.* Finally, students learn to understand drama as a valued, unique, and significant aspect of every cultural group in the world.

Dance

Dance occupies a very special place in the Elementary Academy. Students approach dance as a celebration of life through movement. Through dance, they discover and develop an awareness of their bodies, how they move through space and interact with others.

We teach dance as an activity that is relaxing, energizing, and fun! Students learn to enjoy and participate in free-form, unstructured dancing, as well as traditional forms like ballet, jazz, tap, ballroom, and pantomime. As they dance, they begin to go beyond the basic movement skills learned when they were younger and to build a sense of self-confidence and accomplishment.

At this level, we stress the universality of dance. Students discover that people dance for many reasons: in ceremonies, to tell stories, or for the sheer pleasure of movement. We include dances of different heritages and cultures in the curriculum and connect dance to literature, history, music, and fitness. For example, students who are studying the contributions of African Americans in American history view performances of the Alvin Ailey American Dance Theater and the Dance Theater of Harlem. And students who are studying the paintings of the French artist Edgar Degas discover that Degas was fascinated by how dancers move, especially ballerinas. They also learn that Degas used his observations of dancers in paintings that show people using those same movements, only in everyday situations. Afterward, students view a performance of *Swan Lake* and make colored drawings of the ballet, based on the work of Degas and their own observations and experiences. They realize that although there are many kinds of dance, they all have commonalities that join people together as members of the human race.

We include dances of different heritages and cultures in the curriculum and connect dance to other subjects.

For one final assessment students choose a classical composition, such as Beethoven's Moonlight Sonata, and produce a contemporary music video for the selected piece. In making the video, students demonstrate research skills, knowledge of the composer's life and times, familiarity with the selected composition, interpretation skills, and the

ability to organize, choreograph, and produce a short piece of visual art. By presenting a classical piece in a modern context, students also discover that certain musical and aesthetic elements transcend time.

The Edison Environment for the Arts

INCLUDES daily experiences in music, visual art, drama, and dance

FEATURES a signature singing program

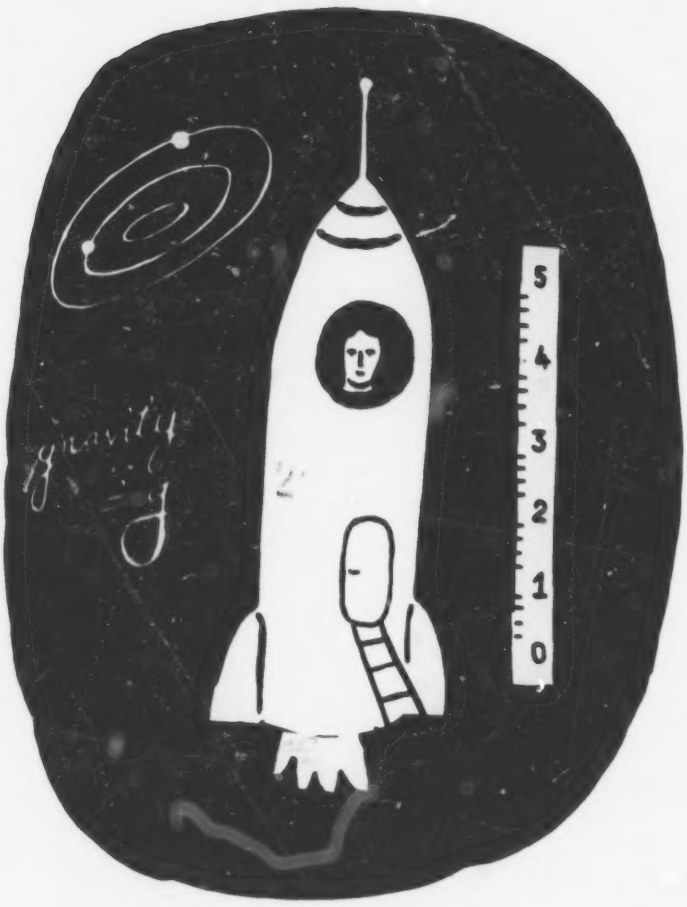
PROVIDES students with additional world knowledge about the arts

ENCOURAGES formal instruction and advanced demonstration of art skills

PROMOTES appreciation of different cultures

INTEGRATES the arts across the curriculum

PERMEATES the life of the school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Mathematics

STUDENTS WILL BE ABLE TO:

DEMONSTRATE number sense about the value of large and small whole numbers, decimals, and fractions

DEMONSTRATE understanding of the numeration system to 1,000,000 by relating place-value concepts and using benchmarks to understand large quantities

DEMONSTRATE understanding of the concepts of the four operations, recall of the basic facts, and the ability to apply an operation to a situation whenever necessary using whole numbers, fractions, and decimals

PERFORM the operations of addition, subtraction, multiplication, and division through the 1,000s, using written computation, estimation, mental math, or calculators

APPLY algorithms proficiently to solve 2- and 3-digit problems involving addition, subtraction, multiplication, and division

EXPLAIN ratio and proportion and apply them to daily situations

ESTIMATE, round, use mental math, or compute exactly to solve a variety of problems as appropriate and explain the reasonableness of answers and how they were derived

IDENTIFY and explain multiples and factors

READ and solve one- and two-step word problems

USE appropriate graphs, pictures, charts, writing, and spreadsheets to communicate mathematical ideas

COLLECT, organize, and describe data, construct and interpret tables and graphs, and infer and support opinion using data

APPLY knowledge of mean, median, and mode

USE simple percentages, such as 10%, 25%, 33%, 50%, 75%, 100%, and 200%, to determine tips, discounts, and other practical applications

RECOGNIZE and describe attributes of quadrilaterals, triangles, and various three-dimensional shapes

DESCRIBE, create, extend, and analyze a wide variety of patterns, displays, tables, and graphs, to show a beginning understanding of functions and the ability to represent relationships symbolically

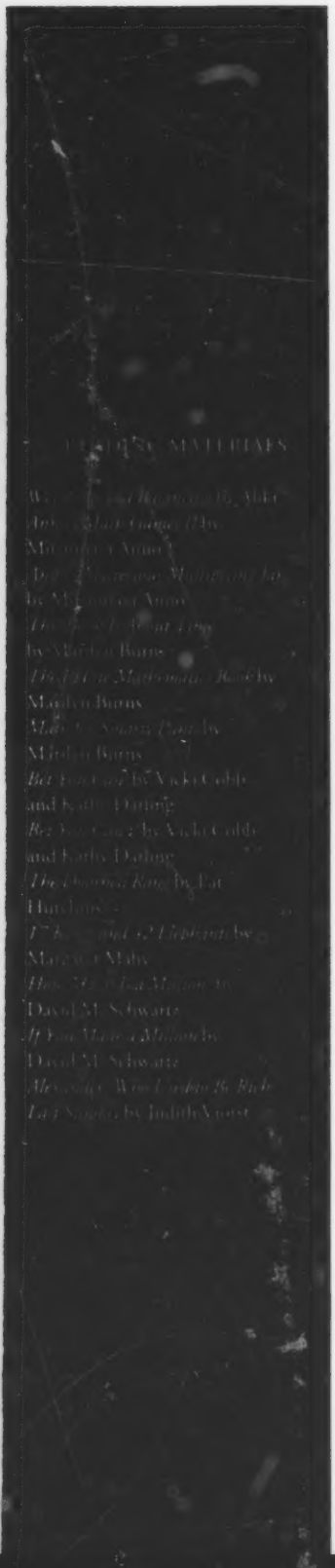
RECOGNIZE simple algebraic variables such as placeholders ($2x + 35 = 65$) or range of values ($5t + 3$)

USE estimation in working with quantities, measurement, computation, and problem solving and explain the reasonableness of answers and how they were derived

MEASURE perimeter, area, volume, angle, capacity, weight, and mass, knowing when to estimate, which measure to use, and when an accurate answer is required

ESTIMATE probability of an occurrence in simple cases, such as the probability of rain, and use various models to make predictions

The Age of Adventure brings new opportunities for students to engage in mathematical exploration in order to better understand how the world works. By applying their more advanced mathematical tools and techniques to a rich variety of cross-curricular projects and activities, they come to understand that math is a powerful mechanism for the information gathering and data collection that are central to



learning at this level. For example, as they study Dinosaurs to Discovery students construct time lines that require understanding of large numbers, and they use spreadsheets to display the data they collect.

Mathematics

Students develop a strong math conf[illegible] in the Primary Academy. Now they are eager to delve into the adventure of mathematics and to explore concepts such as decimals and percentages; mean, median, and mode; ratio and proportion; and factors. In addition, students are capable of applying their knowledge to solve many real-world problems. Their work in the Elementary Academy balances concept instruction with meaningful application. For example, they create scale drawings of suggested visitor spots in their My Place travel guides. Each student carefully renders a drawing of a playground, park, or recreational area in the community that families might want to visit. Through this activity, students demonstrate their ability to apply many skills and concepts, including fractions, measurement, ratio and proportion, angles, area, and perimeter.

Edison partnership schools use a spirit of adventure to avoid the greatest pitfall of math education for the elementary-age student: "math anxiety." Teachers present math skills as useful, enjoyable abilities, and they draw compelling examples from the entire range of human experience. For example, students find delight in mathematics by solving puzzles, playing games, and engaging in activities such as number riddles and magic squares. They also explore the mathematics inherent in scientific discoveries, in awe-inspiring architecture, and in the works of outstanding artists and musicians throughout history.

Students' math environment continues to be rich in problem-solving opportunities as they explore all the basic operations with emphasis now on fractions, decimals,

and percents. Students participate in wide-ranging discussions about math, engage in a variety of cooperative-learning projects, explore simulations, and make increasingly more sophisticated mathematical observations. They write in their math journals daily, recording their ideas, their notes on projects in progress, and summaries of math projects they've completed.

Students learn math not simply by memorizing rules, but by understanding why the rules work and being able to provide their own explanations. Rules like "Yours is not to reason why, just invert and multiply," which explains how to divide whole numbers by fractions, are not acceptable in Edison math classes. We want students to understand that in math they have to be able to explain how they get the right answer. This means being able to explain the answer not only to themselves but also to others. Does this mean that correct answers are unimportant in partnership schools? Not at all. It simply means that it is important to know why an answer is correct, because that knowledge leads to deeper understanding and the ability to learn and use math in a variety of contexts.

We want students to understand that in math they have to be able to explain how they get the right answer.

Calculators and computers are important parts of the Edison math program because they greatly expand the range of problems and calculations that students can perform. Of course, students still use pencil and paper to complete some algorithms. But the math program for this academy emphasizes choosing from a range of problem-solving methods and tools, including mental arithmetic. And we often ask students to explain why their calculated or computed answers are reasonable, thereby calling on their understanding of operations and strengthening their ability to judge the validity of answers. Computer-based spreadsheet programs provide many opportunities for students to manipulate data. They also use the computer to engage in long-term data-collection projects with their peers in the Edison national system, to review math facts, and to complete cooperative lessons and projects.

TEACHING RESOURCES

Math by All Means. Multiplication (TERC)
Math by All Means. Geometry (TERC)
Seeing Fractions (TERC)
Every Day Counts (D. C. Heath)
Used Numbers: The Shape of the Data, Prediction, and Sampling (TERC)
Mathematics: Assessing Understanding, Featuring Marilyn Burns (Cuisenaire)
Number Power (Cuisenaire)
Tangram Kit (Delta Education, Inc.)
Pattern Blocks Kit (Delta Education, Inc.)
Geoblocks Kit (Delta Education, Inc.)

At this age, students continue to use manipulatives to develop their understanding of math concepts. Later, they apply what they've learned, often through hands-on projects. For example, students explore multiplication using beans, counting rods, and other collectibles from their Kids' Collections, then they apply their knowledge by painting pattern pictures on large sheets of butcher paper. Similarly, students explore fractions using fraction bars, homemade models, egg cartons, pattern blocks, and fraction circles. Then they put their knowledge to work as they plan a class picnic, cutting finger sandwiches into halves, thirds, and fourths and increasing recipes by as much as six and one-half times. And students apply their growing understanding of quadrilaterals, triangles, and three-dimensional shapes by creating and adding to an ongoing list of Shapes in the Environment.

Throughout this academy, students are introduced to great mathematical ideas and inventions. Here are just some of the Greats they encounter:

THE GREATS: IDEAS AND INVENTIONS

- ABACUS
- ADDING MACHINES
- CALCULATORS
- CALENDARS
- CLOCKS
- COMPASSES
- COMPUTERS
- NUMBERS
- PROTRACTORS
- RULERS

As students finish the Elementary Academy, they are able to look for multiple ways to solve complex problems individually or in a group, to apply math to other subjects and to their own lives, to compute with ease, and to begin prealgebra in the next academy. They eagerly look forward to continuing their study of mathematics because they have discovered its power, beauty, and usefulness in real-world situations.

Assessment in Action

Students demonstrate and apply their math skills in a series of assessments, some of which become part of their About Us portfolios. In one concluding assessment, students plan a trip to one of the U.S. cities they studied. Each student must map travel routes, schedule an itinerary, decide what clothes to bring based on weather patterns for the selected city, "pack" necessary items in a single suitcase of a specified size, draw up a budget and keep track of expenses, choose affordable meals and recreation from available tourist information, and decide how to get to and from local tourist spots most efficiently and economically. Through this entertaining real-life assessment, students get the chance to demonstrate their problem-solving abilities and other math skills such as measurement, volume and capacity, the four operations, and data interpretation.

The Edison Environment for [illegible]

PROMOTES problem solving and reasoning
VALUES mathematical thinking
USES mistakes as learning opportunities
ENCOURAGES the use of many problem-solving strategies
CONNECTS math to real life
PROVIDES opportunities for students to communicate mathematically
SUPPORTS cooperative learning and group problem solving
APPRECIATES the beauty of mathematics

Standards for Science

STUDENTS WILL BE ABLE TO:

RESPOND to questions and problems, such as describe the structures and functions of the major human body systems, in order to demonstrate their growing scientific knowledge about important aspects of the natural and human-made world (as described in the lists of life, earth, and physical science concepts that follow)

RECOGNIZE, explain, cite examples of, and use appropriate science concepts and generalizations, such as: all objects occupy space and have mass; green plants make their own food; and the motion of an object can be described as change in position over time and can be graphed as such

PROVIDE plausible explanations for natural phenomena or technological developments, such as why the dinosaurs disappeared and how water changes state in nature

PERFORM laboratory and simulated investigations, properly using appropriate materials and equipment, proposing and testing hypotheses, accurately recording data, carrying out simple calculations, displaying data in simple graphical formats, drawing appropriate conclusions, and communicating these conclusions clearly and with understanding

USE increasingly sophisticated science process skills in their thinking and exploring, such as classifying in a variety of ways, comparing and relating, hypothesizing, and controlling variables

RECOGNIZE community or school problems that have a scientific component and, if appropriate, formulate a scientifically sound plan of action for addressing those problems

USE mathematical knowledge to solve scientific problems

EXHIBIT scientific attitudes, appreciations, and dispositions in their lives, such as a desire to understand why phenomena occur, excitement in making discoveries or inventions, a healthy skepticism toward assertions of scientific fact that are unsupported by data or reasonable explanations, and collaboration in scientific explorations

Science—the adventure continues, as students learn about great scientific discoveries and find out why certain phenomena occur in nature and in the human-made world. Why did the dinosaurs disappear? and How does television work? are just two questions elementary students ask and are capable of exploring in depth. Students investigate the science inherent in some of history's greatest adventures—from navigating the seas that brought explorers to distant shores to launching the space shuttle *Discovery*. These scientific discoveries are featured prominently on students' Dinosaurs to Discovery time line.

Science

We maintain the enjoyment, excitement, and experience of science by providing students with creative opportunities to learn, invent, experiment, and discover. In this academy, the science curriculum balances hands-on experiences and interactive investigations with learning activities that increase students' storehouse of empirical knowledge. In addition, we emphasize regular use of some of the equipment that scientists use: computers, hand lenses, thermometers, probes, and other instruments.

Electronic Material

Whatever Happened to the Dinosaurs? (Golden)
Dinosaur Adventure (Knowledge Adventure)
Kids Network (National Geographic Society
Windows on Science (Optical Data Corporation)
Rainforest (PBS Home Video Pacific Ar
The Voyage of the Mimi I (Sunburst)
Space Adventure (Knowledge Adventure)
Race to Save the Planes (Scholastic)

Elementary students develop and refine appropriately sophisticated process skills, tools, and techniques for scientific inquiry. These include controlling variables, designing experiments, taking notes, modeling, graphing, comparing and relating, and collecting, sorting, and classifying natural objects in a variety of ways. As in other subjects, students also learn more sophisticated methods for collecting data and gathering information. For example, computer-based research projects allow students to interact with a larger segment of the world. These collaborations, which may be conducted within or between schools via the computer network, grow out of students' questions about the natural and human-made world and provide additional opportunities for writing and speaking about science. Students who live in a warm climate and are studying weather, for example, might collect information on snow from Edison students who live in the Northeast.

Collaborations conducted via the computer network grow out of students' questions about the natural and human-made world.

Students work in groups on extended (one- to three-month) case studies on interdisciplinary topics spanning the fields of science and the history of Earth. For example, in a case study that connects naturally with the geography curriculum, students might make and use maps to better understand geologic landforms, ocean currents, and climate and weather patterns. Over the course of the three years, every child participates in at least three in-depth case studies in each discipline: life, earth, and physical science. Included in every Elementary Academy child's experience is also at least one case study in each of the following areas: the human body, technology, and the environment.

As groups of students conclude their in-depth explorations, they prepare presentations for other students in their academy. These presentations provide another mechanism for integrating the curriculum and may take many forms—from skits and plays to videos, computer-animated demonstrations, bound books, or drawings. For example, a group working on the chemistry of cooking may decide to prepare lunch for

their classmates and to show a video they made explaining the chemical changes that took place as each part of the meal was prepared.

In the course of their in-depth case studies, students are introduced to a wide range of science concepts and content. In this academy, they are expected to master material in the following areas:

LIFE SCIENCE

- Different levels of organization of life: cells, tissues, organs, individuals, populations, species, and higher taxonomic groups
- Reproduction and heredity
- Variation, diversity, adaptation, and evolutionary forces
- Food chains, food webs, and ecosystems
- The effects of tobacco, alcohol, caffeine, and other drugs
- Conservation of the environment

EARTH SCIENCE

- Changes in Earth through time
- The solar system, galaxies, and the universe
- The water cycle
- The oceans

PHYSICAL SCIENCE

- Energy: heat, light, sound, electricity
- Solids, liquids, and gases and changes of state
- Physical and chemical properties and changes
- Simple machines, forces, and motion
- Electric current and magnetic forces
- The physics and chemistry of today's technologies
- The physics and chemistry of everyday life

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In one intensive project that illustrates how the science curriculum at this level relates to the academy theme of adventure and discovery, a team of twelve students and their teacher work with data from and photographs of Mars provided by scientists at NASA via computer networks and videocassettes. Their goal is to learn more about Earth by studying Mars. They explore such questions as: Did Mars have an Earth-like climate at one time? If so, where did it go and why? What can we learn about Earth by knowing the answers to these questions? Might there once have been life on Mars? What sort of evidence might we look for to answer this question? Through a combination of work with computers and video, in the science lab and outdoors, the students act as an interdisciplinary team of climatologists, biologists, meteorologists, geologists, and astronauts exploring these questions and more. At the end of their six-week-long journey, they may generate more questions than they answer. But they learn a great deal of basic science, sharpen their science process skills, and develop a keen appreciation for many of the methods and difficulties involved in contemporary scientific investigations.

Through their study of science, elementary students meet many of the world's great scientists and explore scientific ideas that changed the world. Here are some of the Greats they encounter:

George Washington Carver
Marie Curie
Charles Darwin
Charles Drew
Albert Einstein
Alexander Fleming
Galileo
Stephen Hawking

THE GREATS SCIENTISTS

Gravity

THE GREATS IDEAS Relativity

Radioactivity

Assessment in Action

In science, as in all the subject areas, students demonstrate their growing knowledge and skills in a variety of ways, including paper-and-pencil tests, lab exams, and other performance assessments. One of these assessments eventually becomes a part of the students' final About Us portfolios. In this assessment, which comes at the conclusion of their exploration on predicting the weather, students are given weather maps and satellite photos for their region and are asked to write a five-day weather forecast, including their reasons for their predictions. At the end of the five days, they compare their predictions with the forecasts of the local weather reporter and with the actual weather and offer explanations for any discrepancies. Finally, the students use the computer and a drawing and publishing program to create a pamphlet describing annual weather patterns and temperature highs and lows for their region of the country.

The Edison Environment for Science

FOSTERS the enjoyment, excitement, and experience of science

PROVIDES creative opportunities to learn, invent, experiment, and discover

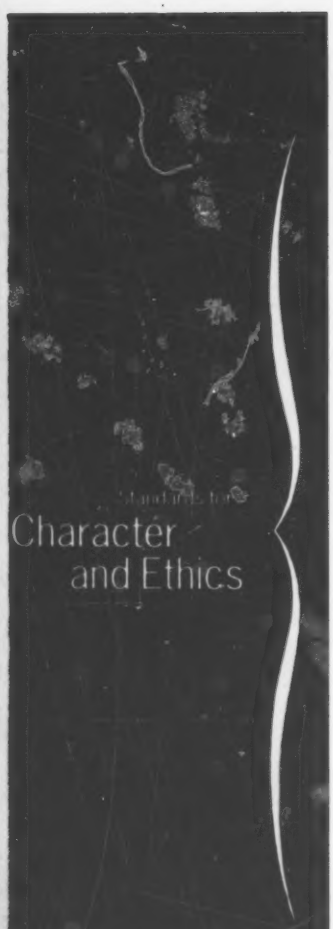
SUPPORTS the acquisition of important scientific knowledge

DEVELOPS sophisticated science process skills

EMPHASIZES habits of research and discovery

ENCOURAGES individual and group activity

Standards for Character and Ethics



STUDENTS WILL BE ABLE TO:

EXPLAIN the characteristics of friendship that go beyond having fun, including loyalty and bringing out each other's best qualities

IDENTIFY examples of integrity in everyday life

EXPLAIN the meaning and value of self-respect, including when to value the opinions of peers and when to resist them

EVALUATE their own behavior, identifying times when they have behaved admirably and times when they have behaved poorly

DEMONSTRATE commitment and skill in helping peers prevent conflicts and resolve disagreements fairly

EXPLAIN the value of a sense of humor in everyday life

DEMONSTRATE diligence and attention to craft in carrying out responsibilities and in projects or hobbies

FULFILL responsibilities toward the school community and other students in a reliable manner

IDENTIFY expressions of democratic ideals in the text of the Constitution and the Declaration of Independence, such as equality before the law

DESCRIBE actions by individual citizens and the U.S. that have lived up to democratic ideals and actions that have clearly violated those ideals

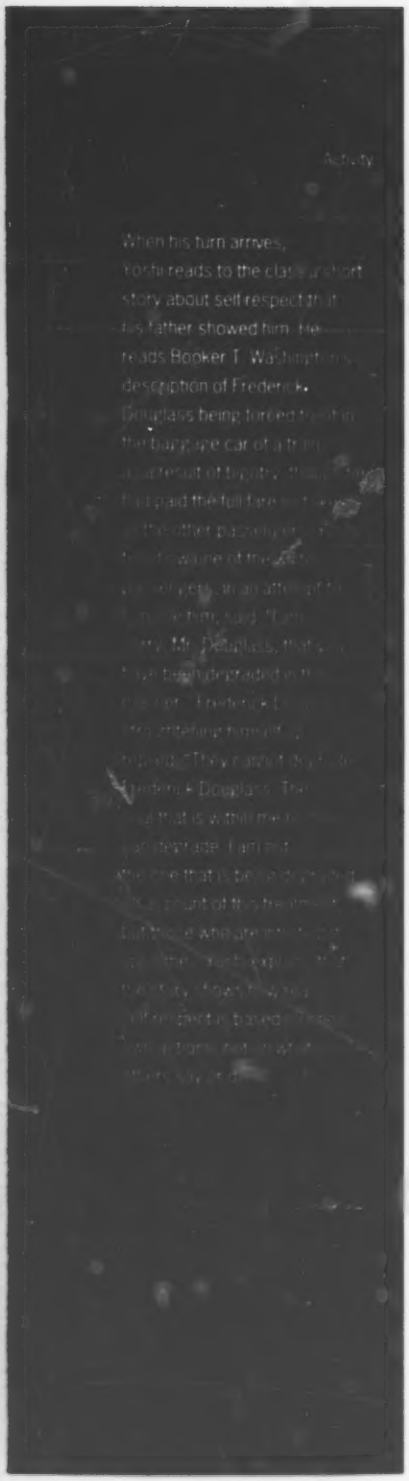
As they journey through the Age of Adventure, students encounter a range of experiences that help teach lessons in good character, including three topics

emphasized in this academy: friendship, integrity, and self-respect. In conjunction with the Dinosaurs to Discovery theme of this academy, they read and discuss stories of adventure in every area of the curriculum. Students meet fictional and real-life heroes who overcome obstacles, accept challenges, and rely on good friends or their own convictions to carry them through.

Character and Ethics

At this age, students encounter new personal adventures in school and in their lives outside of school, and we encourage them to face social, academic, and emotional challenges with confidence and hope. The small school-within-a-school structure of Edison academies makes this daily support and encouragement possible.

Within this supportive structure, elementary students develop greater consistency in practicing other basic aspects of character. They learn about the rights and responsibilities of citizenship; they practice kindness, respect, honesty, and fairness in their dealings with others; and they show courage, responsibility, and perseverance at appropriate times. Students also understand the value of hard work, diligence, and attention to craft. They develop better judgment in applying these in particular situations. For example, we want students to show courage in their daily lives and to be adventurous, but we also take special care to caution them against reckless behavior that can result in injury to themselves or others. In conjunction with the physical fitness and health curriculum, students learn to recognize the dangers of smoking, abusing drugs



and alcohol, and engaging in other risky behaviors in school or outside of school.

Edison partnership schools are places where friendships grow and flourish. In this environment, elementary students begin to form their first mature friendships and to establish the interpersonal behaviors that will shape their relationships with other people over a lifetime. Students explore the meaning of friendship and discover that good friends can provide much more than simple amusement. Through wide-ranging discussions springing from literature and from students' own experiences, they come to understand that friendships can enrich their lives in important new ways.

Students learn that people with integrity apply the same ethical standards to their entire lives, public and private.

Elementary students are capable of understanding that the most rewarding friendships are based on trust and bring out people's best qualities. Students identify the positive aspects of their own friendships and also examine great stories of friendships, such as Helen Keller and Anne Sullivan, Robin Hood and Little John, Damon and Pythias in ancient times, David and Jonathan in the Bible, and so on. Aesop's fable "The Bear and The Travelers" leads to a discussion of the meaning behind the phrase "fair-weather friends," while "Cat and Mouse in Partnership" from the Brothers Grimm paves the way to discussing trust among friends. In addition, the African folktale "Why Frog and Snake Never Play Together" provides opportunities to discuss what one can lose by rejecting friendships because of prejudice.

Students at this level also explore the meaning of personal integrity. They learn that people with integrity apply the same ethical standards to their entire lives, public and private. A common thread of conviction links their behavior during work and play and, like the individual threads of a tapestry, each of their actions helps to determine the beauty and consistency of the whole. The lessons that students learn in integrity apply to many areas of their school and personal lives. In conjunction with the study of biographies and the history curriculum, students also examine character and integrity over the course of a life.

Self-respect is another important emphasis. Students learn that real self-respect can't be given or taken away by others and that it must be earned by living up to high standards. In this academy, students develop self-respect through service to the school community, academic and artistic achievements, designing and making products that meet actual needs, and improving their skill on the playing field. They complete assigned tasks diligently and on time, practice and develop academic skills, volunteer to do things that are helpful or worthwhile, and cultivate their growing interests and talents. In all of these ways, students learn that self-respect is largely their own responsibility.

Students at this age are ready to understand that honest and open debate is a tool for learning. They discuss the merits of works of art and literature, explore solutions to problems in math and science, and debate the application of democratic values and principles found in the Constitution. In the course of these discussions and debates, students learn the value of expressing well-thought-out opinions and offering new ideas. History provides numerous examples of important changes in beliefs and actions that resulted from well-reasoned arguments. We stress the value of debate, argument, and discussion, but we also emphasize the need for resolving disagreements through thoughtful discussion rather than physical conflict. All students learn simple techniques to talk through disputes, and we expect them to apply these and all other lessons drawn from the character and ethics curriculum in class and on the playground.

The character and ethics curriculum introduces students to great ideas that influence how people view themselves and others. Here are some of those ideas:

THE GREATS IDEAS

COURAGE
EQUALITY
FAIRNESS
FRIENDSHIP
HONESTY
INTEGRITY
JUSTICE
KINDNESS
SELF-RESPECT

Throughout this academy, Edison's strong emphasis on community service connects students' explorations of character and ethics with their ongoing study of place. Through regular service to the community, they learn that they have the power to effect positive change in their immediate surroundings.

Assessment in Action

As part of the About Us portfolio assessment, students collect accounts of actions that demonstrate real friendship, integrity, self-respect, courage, kindness, and other aspects of good character that they have studied. For each character trait, students collect examples from the community, such as newspaper clippings, as well as stories of things that happened in the school or among their peers. For each account, students write an explanation of why it exemplifies good character and ethics.

The Edison Environment for
Character and Ethics
RESPECTS parents' primary role
PROMOTES courage and confidence
TEACHES the rights and responsibilities of citizenship

Standards for Physical Fitness and Health

03

Standards for

Physical Fitness and Health

STUDENTS WILL BE ABLE TO:

PLAY modified games such as minisoccer, short-court basketball, or volleyball with a lowered net, using motor skills with speed and accuracy

MANIPULATE objects such as balls, bats, and rackets with speed and accuracy

EXHIBIT developmentally appropriate and individualized objectives for speed, flexibility, strength, and endurance through regular participation in activities such as jogging, cycling, stretching exercises, and calisthenics

DESIGN and perform competently gymnastic routines, movement exercises, and dances for classmates to learn and enjoy

DESIGN and maintain a Personal Fitness Plan that includes healthful nutrition, aerobic activity, and strength and endurance conditioning appropriate to age and fitness level

EXPLAIN orally and in writing what is meant by different stages of development, describe what people need to be healthy at different stages of life, and list healthful choices and strategies most appropriate to their age group

EXPLAIN the changes experienced as they move into puberty and describe the parts and functions of the human reproductive system

EXPLAIN orally and in writing how the amount and balance of foods in the diet influence growth, energy, and health

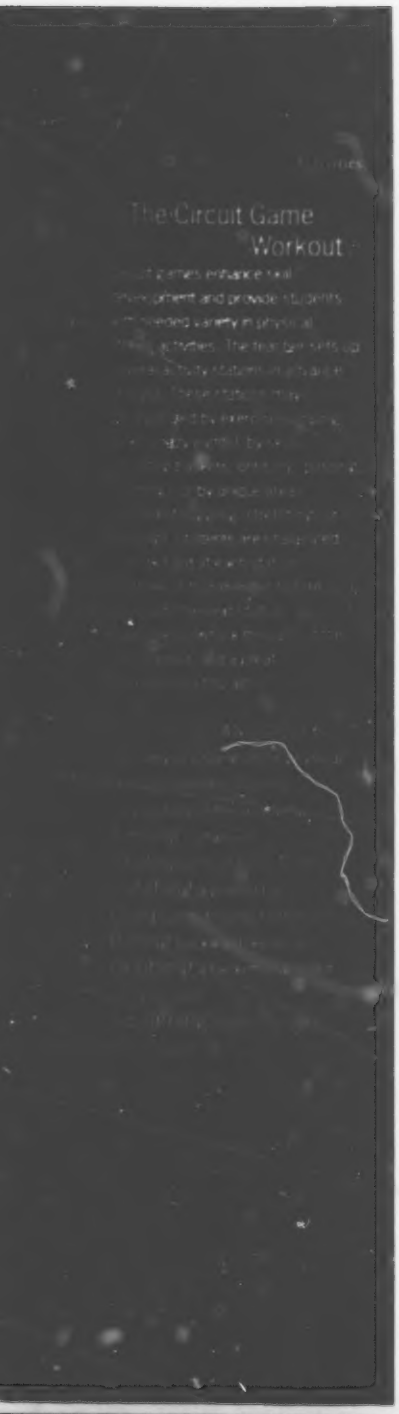
DESCRIBE and apply ways of responding to pressure from others to engage in risky behaviors involving drugs, alcohol, and tobacco

DEMONSTRATE self-defense skills, fire safety procedures at home and at school, and competence in basic swimming strokes (where pools are available)

Physical fitness and health are of critical importance to students' overall success in school. Many adults report that they became dropouts from regular physical activity during their elementary years because they felt embarrassed, uncoordinated, or excluded. That's why a major goal of the physical education program in this academy is to keep students interested and engaged in the adventure of physical activity. Elementary students participate in physical education and health classes every day for one hour, ensuring that they develop the knowledge, habits, and competence that lead to confidence and enjoyment of physical activity for a lifetime.

Fitness

Elementary-age students are growing at a steady rate. They have developed good balance, coordination, power, speed, and agility. By the time they leave this academy, they are at the end of childhood and poised for their adventure into adolescence. They are ready for beginning experiences with sports that require good eye-hand coordination, such as short-court tennis, modified basketball, volleyball with a lowered net, T-ball,



and so on: but they still require drill work to refine their skills, develop their coordination, and prepare them to enjoy more advanced sports in the next academy. They understand the importance of rules and are increasingly able to deal with success, failure, and challenge.

During the elementary years, students continue to evaluate and modify the Personal Fitness Plans they began in the Primary Academy, focusing on healthful nutrition and sustained aerobic activity, in addition to developmentally appropriate objectives in the areas of speed, flexibility, endurance, strength, and agility. They practice the skills required for more complex movements during games and sports, such as catching a ball or avoiding an opposing player while moving down a court or field. Students also learn to apply rules and strategies while playing sports and games.

> A major goal of the program is to keep students interested and engaged in the adventure of physical activity.

The fitness program at this level focuses mainly on participation in physical activity, but students also engage in a "spectator" project that links sports, history, and language arts. Each student chooses a sporting pioneer, such as Jackie Robinson, to research and report on using a medium of his or her choice. Students are evaluated on how well they portray the accomplishments of their chosen pioneer in a historical context.

Health

The health curriculum [illegible] lectures on the stages of human growth and development and on what people need to stay healthy at various stages of life. In concert with the science curriculum, students learn about the functions of major external and internal body parts and about the general functions of the body's systems. They discuss changes that occur as a result of growth and development from birth to adulthood, such as weight and body shape.

In the last year of this academy, students focus on changes associated with puberty. They learn about the human reproductive system and its functions. We take great care to work closely with families and communities on this area of the curriculum, respecting local needs and priorities.

One intensive project that relates to the science curriculum and capitalizes on the academy theme takes students on an adventure through the human body. They start by reading Joanna Cole's *The Magic School Bus Inside the Human Body*, then they create their own list of Amazing Facts about their bodies based on research from multiple media sources. Next, the students work with partners to draw life-sized outlines of their bodies on butcher paper, annotating the drawings with their Amazing Facts.

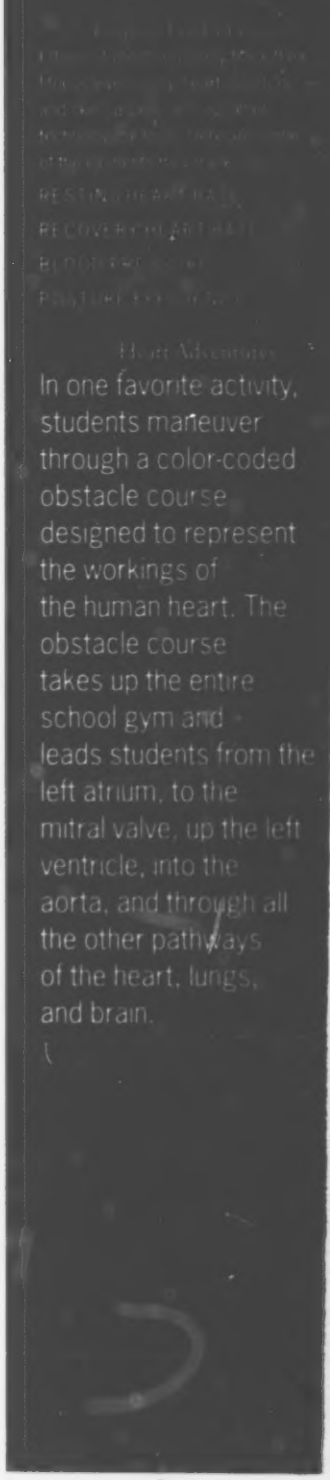
Students plan and prepare healthful meals for themselves and their families, including foods from different cultures.

The nutrition program emphasizes how the amount and balance of foods in the diet influence growth, energy, and health. Students learn how food preparation and storage may affect the nutritional content and safety of foods, and they plan and prepare healthful meals for themselves and their families, including foods from different cultures.

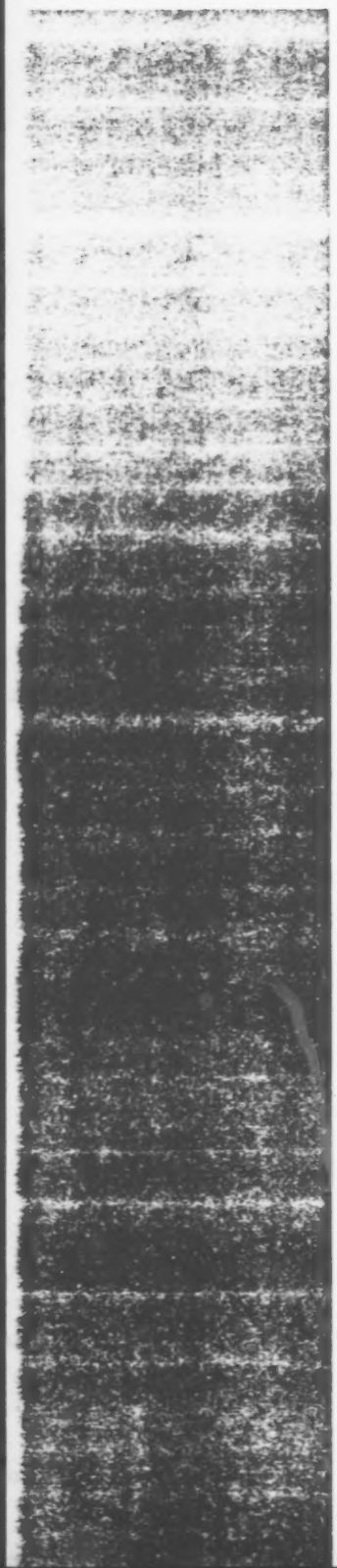
In the area of personal safety, students develop and extend their repertoire of safety skills to include basic swimming strokes (in areas where pools are available), self-defense skills, and fire safety procedures at home and at school. The Street Safety program focuses on peaceful conflict resolution and helping students recognize the possible consequences of smoking and abusing drugs and alcohol. Students practice conflict resolution and resistance skills in various role-play situations.

Learning in Action

Students demonstrate their knowledge and skills in this area of the curriculum in special assessments that contribute to their final About Us portfolios. For one assessment, groups of students produce a time line that traces dietary practices through history, starting at the turn of the century. Students then design a public service campaign com-



In one favorite activity, students maneuver through a color-coded obstacle course designed to represent the workings of the human heart. The obstacle course takes up the entire school gym and leads students from the left atrium, to the mitral valve, up the left ventricle, into the aorta, and through all the other pathways of the heart, lungs, and brain.



municating what is known about healthful nutrition in the 1990s. The campaign includes posters, bumper stickers, and flyers that the students hang and distribute around the school. This meaningful assessment does double duty: Students get a chance to show what they know about the American diet, and the entire school community benefits from the visual reminders of proper nutrition.

Students also create "personal best" trading cards about themselves to include in their final portfolios. These cards contain statistics on the students' sporting and fitness performances in this academy, showing improvements over time. Students may include stats on how far they can run in one minute, how long they can dribble a ball without losing control, or how many cartwheels they can turn in a row.

The Edison Environment
for Physical Fitness and Health

PROMOTES physical activity and healthful habits
EMPHASIZES motor skills and aerobic capacity
TEACHES healthful food choices
OFFERS strategies for staying safe in school, at home, and on the streets

Standards for Practical Arts
and Skills

Standards for
Practical Arts
and Skills

STUDENTS WILL BE ABLE TO:

APPLY the Edison KID program to sketch a new and improved classroom worktable; present the sketch to peers, teachers, parents, or outside professionals; and use their criticisms to improve the design

PRODUCE at least three stories for the school or class newspaper, including photographs and layouts

IDENTIFY and describe the functions of different parts of a system, such as the local transportation system, and list ideas for improving its efficiency

APPLY library research skills and use the computer to acquire and interpret the information needed to complete a group or individual project

APPLY public speaking skills to research, prepare, and present an oral report on a subject of personal interest

MAINTAIN print and electronic portfolios containing work samples, photographs, and drawings

DESCRIBE orally and in writing the activities and responsibilities associated with three different careers

WRITE clearly and legibly in a handwriting style of choice

USE appropriate manners when working, playing, and eating

APPLY standard letter-writing form to compose and send friendly or business letters to favorite authors, family members, sports figures, or civic or business leaders

MAINTAIN checkbooks or savings passbooks for use in the classroom "bank"

LOAD, run, and use computer spreadsheets, databases, networks, graphics programs, and drawing programs

DEMONSTRATE competence in keyboarding by touch-typing a 100-word document with no more than three errors

COMPLETE a simple video using a camcorder

lementary Academy students are ready to acquire skills that will pave the way for the adventure of adult living and work. They're also developing a keen interest in discovering how things work. Designing and making things, speaking in public, using computers, maintaining checkbooks and savings accounts, and using proper manners are just a few of the real-life skills students develop in this academy and apply throughout their lifetimes.

Practical Arts

The practical arts and skills program in the Elementary Academy is linked to every subject area. For example, students apply language arts and visual arts skills when they work in the Collaboratory to write articles and design accompanying layouts for the academy newspaper or publish an oral history of their community. They use library skills and

computer databases to acquire and interpret information about famous inventors and their inventions through the ages. They apply measurement skills and their growing knowledge of geometric shapes when designing and building simple or complex structures. And multi-age cooperative-learning activities in all areas of the curriculum help students learn to share materials, take turns, and get along with others—all skills that prepare them for eventual roles in adult work teams.

Edison's distinctive design curriculum, called the KID program, continues in this academy and relates closely to problem solving.

KID stands for:

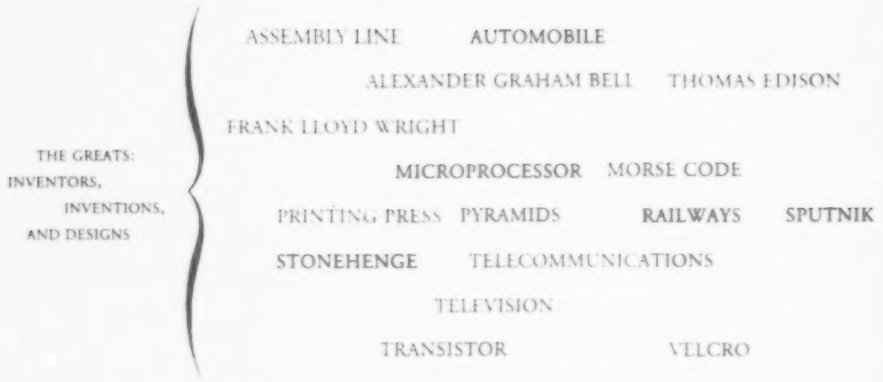
KNOWLEDGE WHAT YOU KNOW

INQUIRY HOW YOU KNOW IT

DESIGN WHAT YOU CAN MAKE OR BUILD WITH WHAT YOU KNOW

Using the KID program, students formulate goals, plan creatively to realize those goals, and assess for themselves the degree to which they succeed. At this level, students also begin to present their products and plans to other people for feedback and criticism. Most important, they learn how to use criticism to improve on their original ideas. This constructive way of thinking about products and problems, which is vital to students' success in school and in life, runs throughout the academies.

In addition to creating their own designs and products, students study great inventors and inventions throughout history—from the printing press to the microprocessor—and track these people and products on their Dinosaurs to Discovery time lines. Here are some of the Greats they encounter:



Students are ready to acquire or refine the life skills they'll use throughout their school careers and in adulthood. These include writing clearly and legibly; using appropriate manners when working, playing, and eating; maintaining checkbooks and savings passbooks; and using proper form when writing business and friendly letters. Students have frequent opportunities to apply these skills in real-life situations, such as writing to local business or civic leaders, opening checking accounts in the academy "bank," and attending meetings or social gatherings after school.

Being able to deliver a quality oral presentation is high on the list of life skills in the Elementary Academy. Students have regular opportunities to deliver oral presentations on books read, projects completed, and research conducted. When crafting their presentations, students learn to evaluate their audience, gather information, compose an outline, prepare presentation materials, deliver the presentation, and solicit and use feedback on their performance. Students also demonstrate their public-speaking skills at the end of the academy, when they deliver a short talk on the subject they know best: themselves.

Elementary students are already comfortable with the computer keyboard and mouse and know how to send E-mail messages and to load and run packaged software. At this level, students also learn to use tool software, such as databases, spreadsheets, and drawing or graphics programs. They develop keyboarding skills and use the computer to maintain their electronic portfolios. In addition, students learn to use video and flash

Exploring the Built Environment

As part of the design curriculum, students undertake an intensive project in which they explore the built environment, starting with what they know best: home. Students visit a home construction site at various stages and learn about planning and architecture, how to calculate the total cost of construction, how to choose building materials, and how to develop a construction schedule. Some students make choices to complete a special project in which they trace the history of a local building and discover that even ordinary structures often have extraordinary stories behind them.

cameras to document and complete long-term projects, and they present a record of their activities in a variety of formats.

In this academy, students demonstrate their growing skills through projects and assessments that eventually become part of their About Us portfolios. For example, students choose a common classroom object, such as a worktable, and research its history and evolution since the turn of the century—from desks to light tables. They use the computer to sketch desks from different historical periods, including the present, and describe in writing how each design was uniquely suited to its time. Then students use the Edison KID program to design an improved worktable for the present. They present their designs to teachers and peers and use their feedback to fine-tune their ideas. Finally, students produce a video advertising their new worktable and explaining its benefits for today's students.

The Edison Environment
for Practical Arts and Skills

PROMOTES real-life skills
CONNECTS to every subject area
PAVES the way for readiness for work
EMPHASIZES design and technology skills

Ensuring Student Success

By the end of the Elementary Academy, students have completed a great adventure in learning. Among their activities, projects, and explorations, they have constructed a scale model of a dinosaur, published a travel guide for their community, created an annotated time line of world and U.S. history, and corresponded with people in every region of the globe. For their final adventure, students prepare a portfolio about themselves, called About Us.

These About Us portfolios contain information about each student, including personal physical characteristics as well as chemical and biological facts that are common to all humans, information about their families and where they come from, their preferences in music and art, their language background, and descriptions of where they live. Students may also include taped interviews with family members, videotapes of themselves at work and play, and maps of real or imaginary journeys to distant places. As a final entry in the portfolio, they present a short illustrated talk on themselves, which is videotaped for later viewing.

This assessment is deliberately structured to integrate learning while focusing on students' sense of who they are and where they fit in the American story. In addition, students demonstrate their grasp of one of the academy's big ideas: People are able to put what they learn to use.

The following vignette illustrates how one teacher evaluates the assessment and how she enlists parents, students, and colleagues in guaranteeing her students' academic success.

Assessment in Action

Mrs. Goldberg and Ms. Tsi are discussing Lily's About Us portfolio. Generally, they are pleased with her efforts, noting her improvements in expository writing, her obvious understanding of how the major body systems function, and her ability to describe her family's journey to America at the turn of the century in an oral presentation that is engaging and well organized.

Ms. Tsi notes that Lily's map skills need further improvement, so she and Mrs. Goldberg compose a recommendation to the student and her parents. The two teachers want to make it clear that Lily needs help with geography during her final month in the Elementary Academy. The two teachers work on the statement, then enter it in Lily's electronic portfolio. Later, Ms. Tsi writes an E-mail message to Lily's parents, asking them to download the file so they can see the recommendation and respond to it. The next day, Ms. Tsi explains to Lily what she has said to her parents. Together, Ms. Tsi and Lily look at the map she drew showing the routes various groups took to the United States and discuss how they will work together toward improvement over the next month.

Ms. Tsi wants to make Lily's electronic portfolio useful to the teachers who will work with her next in the Junior Academy and also helpful to Lily herself, who will use the portfolio to reflect on her own growth. Of course, the About Us portfolio isn't the only item used to judge Lily's readiness for the next academy, but it is an important part of her overall evaluation and provides a clear record of her growth and development.

The Edison Edge

High standards, state-of-the-art technology, ongoing assessment, and regular communication between school and home ensure that Lily and all students get the support they need. But the Edison edge comes down to the talent and creativity of local teachers and

principals in partnership schools. They are the ones who create a positive atmosphere for learning and develop inspiring, well-crafted lessons.

Edison understands that teachers who are supported by principals acting as instructional leaders are vital to the success of partnership schools. And nothing is more critical to the quality of their work than training and support. In the Edison system, that support comes in the form of extensive professional development, state-of-the-art technology, and regular opportunities for collaboration and teamwork. In addition, we provide model lessons and assessments to guide teachers as they develop their own.

Working in cooperation with our public school partners, we believe that we can provide all students, regardless of economic or social circumstances, with an education that is academically excellent, that is rooted in democratic values, and that prepares them for productive lives.

Acknowledgments

The Edison Project recruited some of the country's leading educators—from the classroom and from the offices of local and state superintendents—to work with us in developing the standards, activities, and assessments described in this publication. We also consulted with representatives from business and the arts. Although we are solely responsible for the contents of this book, we wish to thank the following people for their time, encouragement, guidance, and collective wisdom:

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